Issue 42
PS
1956 Series
THE PREVENTIVE MAINTENANCE MONTHLY
SPQR
TAKE A LETTER TO PRIMUS SECUNDUS, FIRST BATTALION ARMOURER: SUBJECT; INADEQUATE REPAIR AND LACK OF PREVENTIVE MAINTENANCE ON SMALL ARMS IN THIS CORPS:
Will Eisner

LEND ME YOUR EARS

THERE comes a time every once in a while when it's a good idea to talk about a thing seriously. When some guys start violating good principles and working habits, that time is now.

Before a carpenter starts a job, he's got to be clued in on his tools—what they are, when and how to use them, and when not to mess with them. If he flubs up—if he doesn't use his tools the right way—chances are good that he'll soon be out of business.

Works the same way with the guys who drive vehicles, but with these guys it could be a matter of life-or-death—if they flub up and don't use the tools they have to work with the right way, chances are that they too will be out of business—and possibly for good.

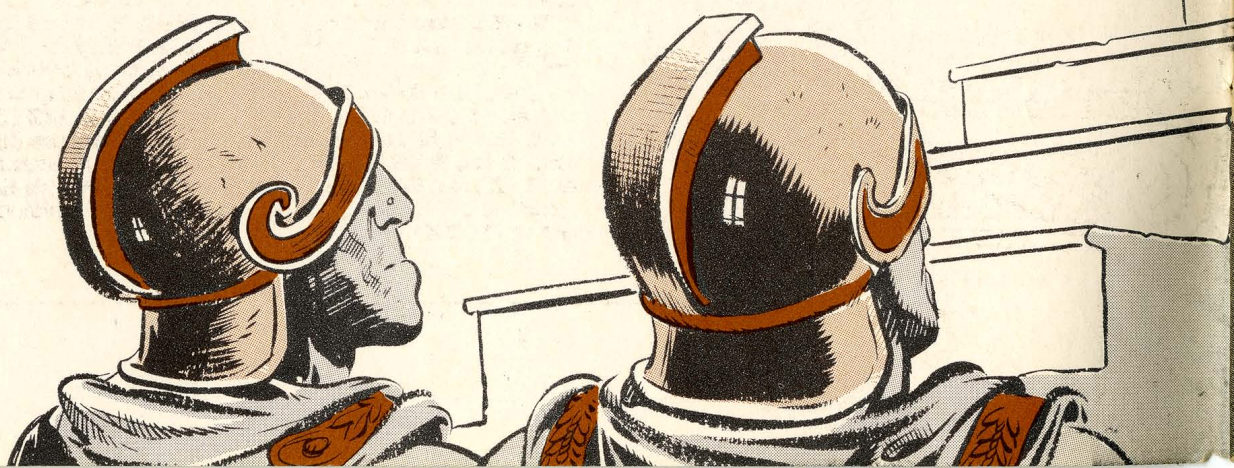
When talking about "tools" for vehicle drivers, I don't mean those wrenches, hammers, screw drivers, grease guns, a guy uses to maintain his vehicles, altho they're darned important—I'm talking about all those gadgets, knobs and levers you use to control and operate your vehicle. Unless a guy knows what they're used for, how to use them and when to use them, he may find himself hauling a harp instead of a heap.

So, it all boils down to this—get clued in before handling. If you don't know, **find out**—find out what the gadgets and thingamabobs are for—find out when to use them—find out how to use them.

Army equipment is getting more complicated each day. The people who make this equipment know this and make provisions for it by writing publications and training people to train other people so that they can train still other people. It's a smart man who takes advantage of these. It's a foolish man who messes around without knowing. He's the one who will more than likely wind up with a statement of charges—or in a pine box.

Your TM is your key. Make sure you have one. More important than that, make sure you know what's in it. Read it and study it—and after you've done that, read it and study it some more. It tells you just what those gadgets on your truck are for—and tells you how to use them.

Your TM is your L-I-F-E insurance, that is—when driving your truck.



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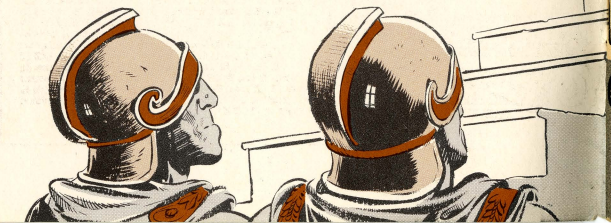

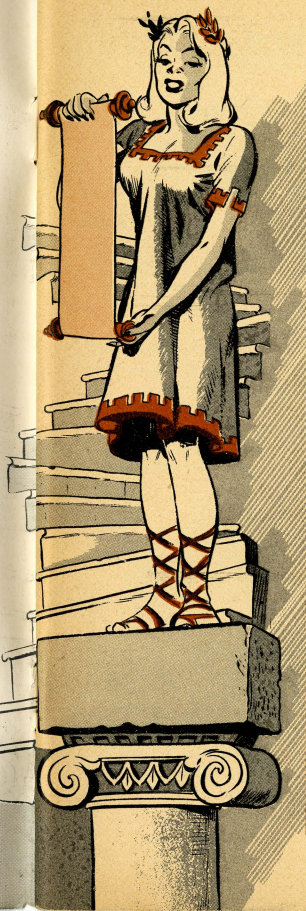

PS MAGAZINE

Issue No. 42 **1956 Series**

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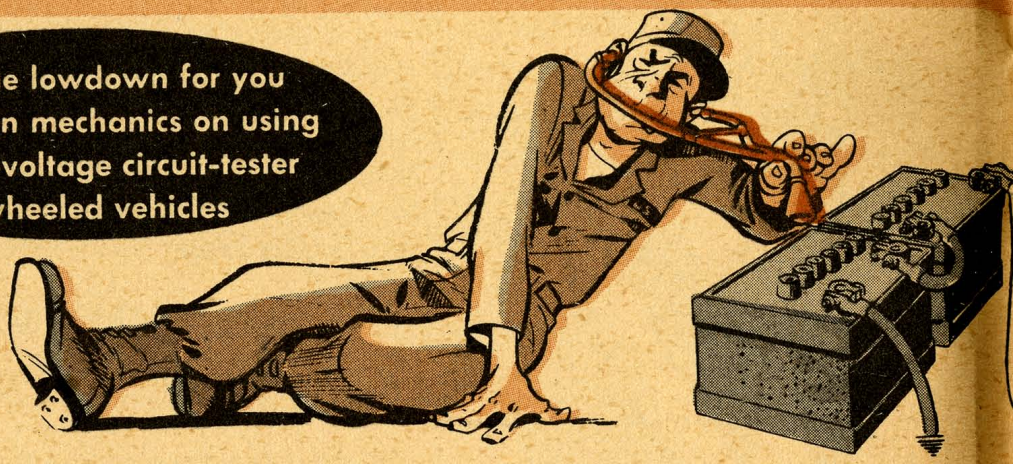
Getting Clued On

HOW TO CHECK OUT YOUR

Here's the lowdown for you 2nd echelon mechanics on using your low-voltage circuit-tester on wheeled vehicles

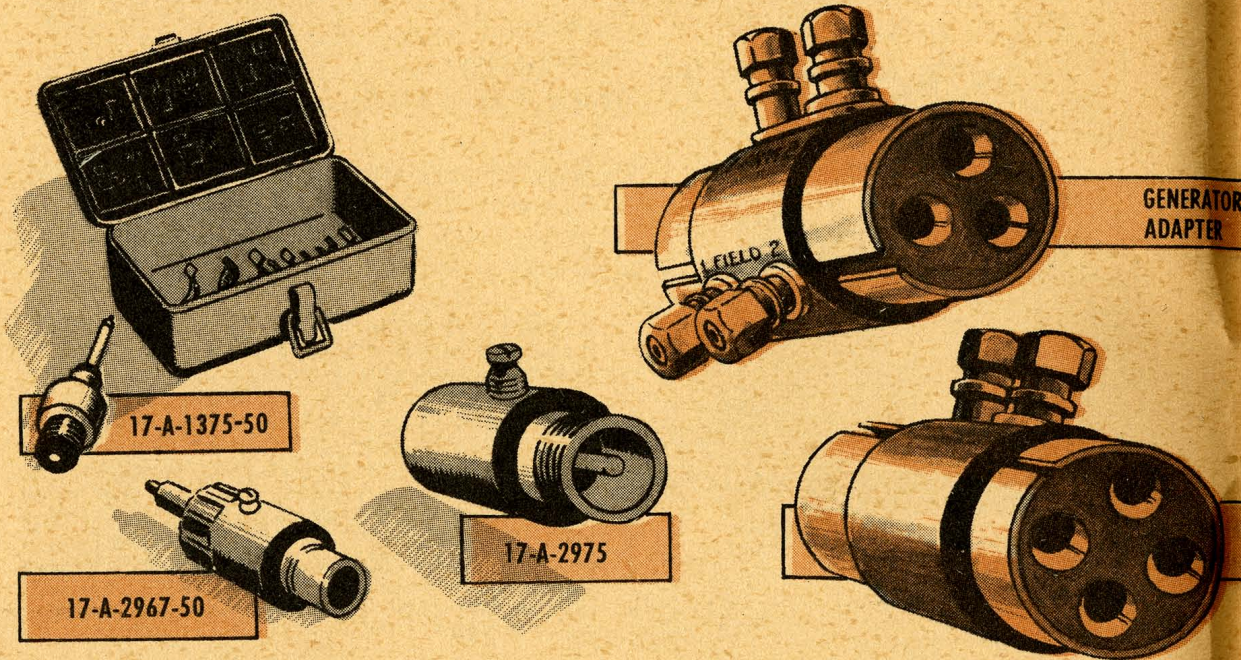


Your truck's 24-volt electrical system's a topnotcher. When it's putting out just right, your truck purrs like a contented pussy.

But there're times when even the best equipment can go phooey. In your truck, it's when one of the gadgets in your electrical system starts acting up. When this happens, your truck won't have the boot it needs to scoot.

That's where you come in. You've got to make sure your truck's getting that boot by testing its battery, starter, generator, regulator, wiring and grounds. These tests will tell you if these separate gadgets are working right.

Seeing that electrical testing is important for the maintenance of your vehicles, Ordnance realizes that you must have a method of testing with or without a vari-



Getting Clued On

HOW TO CHECK OUT YOUR 24-VOLT ELECTRICAL SYSTEM

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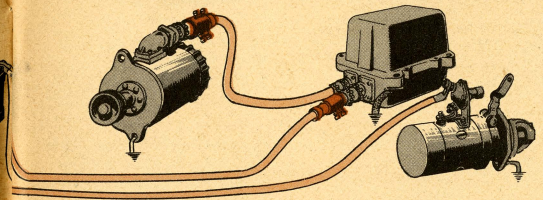

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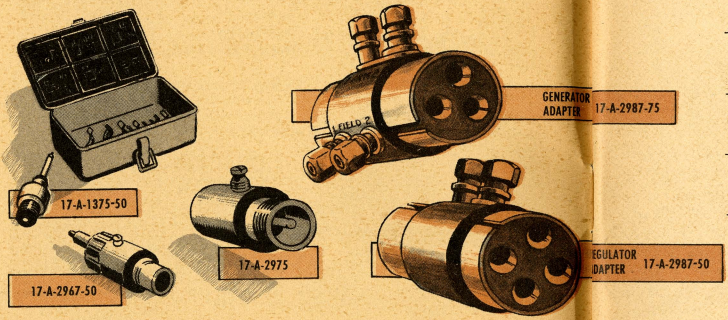
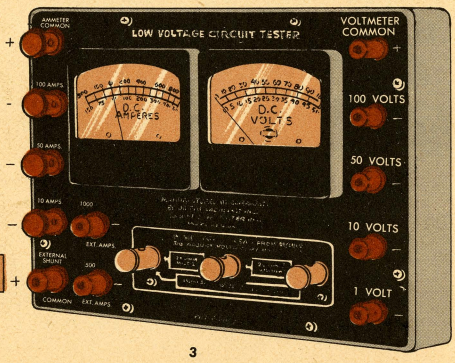
Seeing that electrical testing is important for the maintenance of your vehicles, Ordnance realizes that you must have a method of testing with or without a variable resistor (Ord Stock No. 17-R-6249). This article tells you how to do it if you haven't got a resistor.

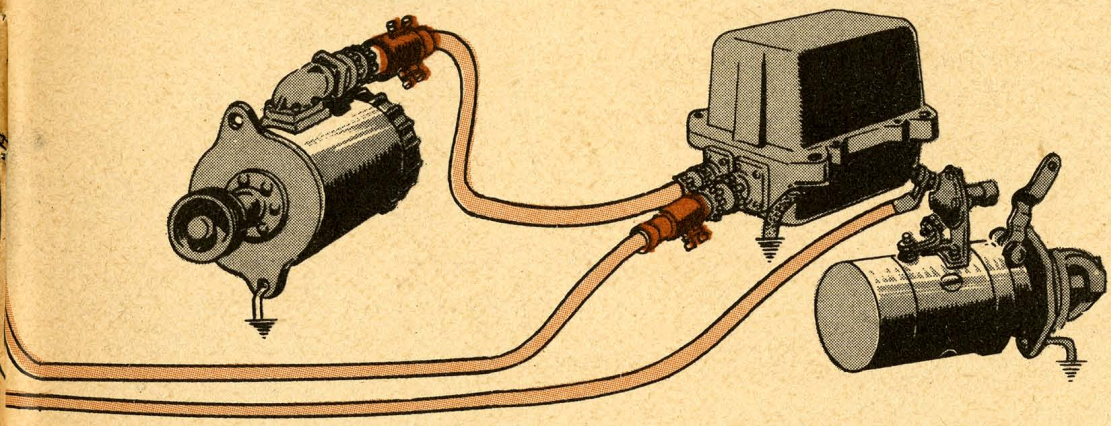
TM 9-8030 on the ¾-ton M37 truck tells you how to check out your 24-volt system with the variable resistor.

To give you all the help you need, you've got a low-voltage circuit-tester (Ord Stock No. 17-T-5575-50; FSN 6625-356-8269) and a set of adapters (Ord Stock No. 17-A-3150; FSN 4910-356-7511) in your Tool Set, Organizational Maintenance (second echelon) Set No. 1 Supplemental (41-T-3538-865). Now, if you'll follow along, you'll see just how to use this equipment and what results you should get.





24-VOLT ELECTRICAL SYSTEM



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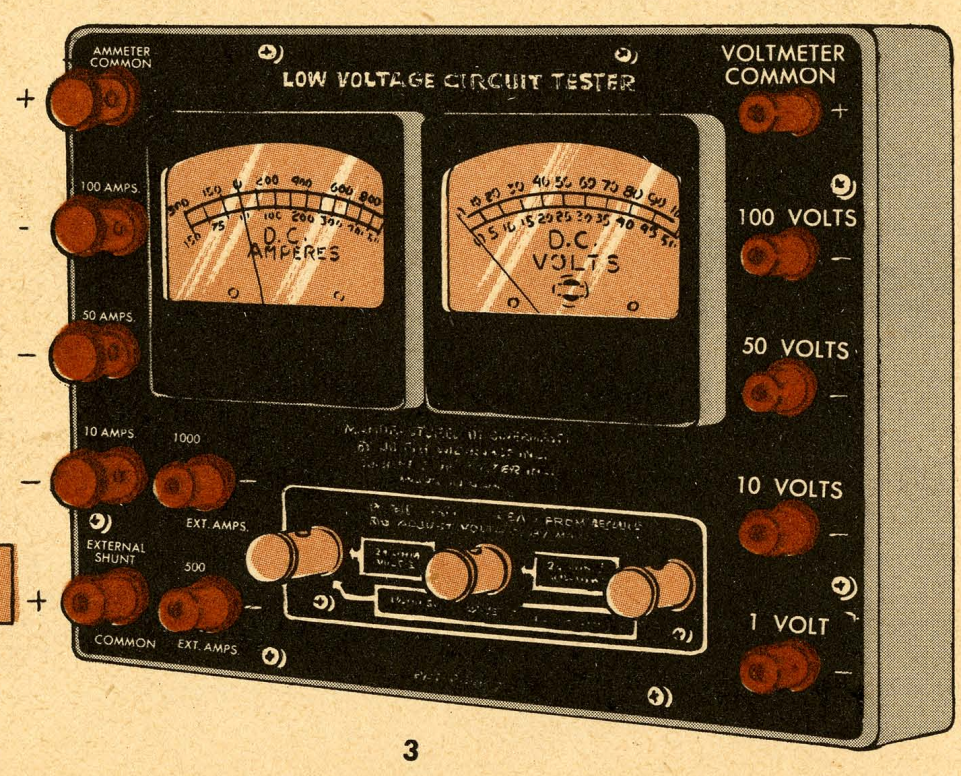
17-A-2987-75

EGULATOR
DAPTER 17-A-2987-50



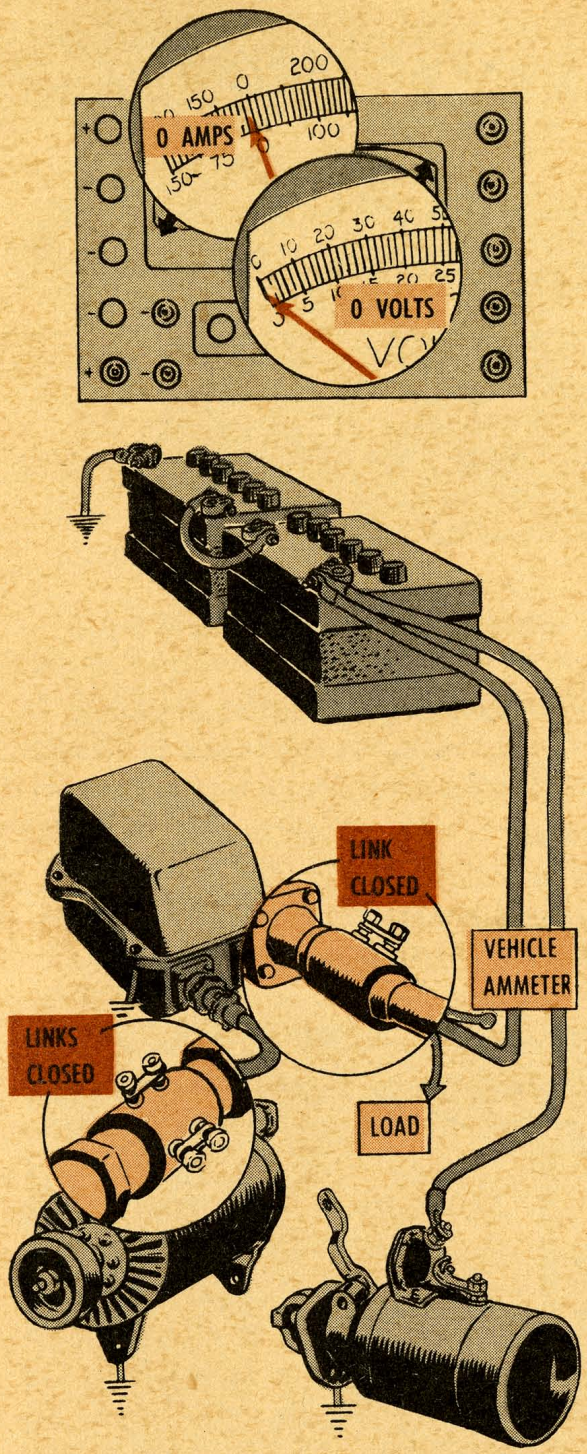


FIG 1—Get Ready. Did you disconnect your battery ground cable before putting your adapters in? **Don't** forget to hook that cable up again after the adapters are sitting in their slots.

TO GET SET

There are a few things you have to know and do before going into the tests. First, before making any test on your generator, charging circuits or regulator, make sure your fan belt's in good shape and adjusted like your TM says. Warm your truck up so your electrical system's putting out like it would on a regular run.

When you hook up your meters and the needles show a bassackwards reading, you've got the wrong plug in the wrong hole. Better reverse those leads before your circuit tester gets mad and starts burning up. (On your tester, the red lead is positive and the black negative.)

There's one other point that's plenty important. ***Always*** disconnect your battery ground cable before installing or removing the adapters, cables or cable connections. Gives fireworks if you don't. Sparks can start flying and if there's any stray gasoline around—bye-bye baby.

If you find any gadget in your system that's not working right, all you do is remove the part, return it to supply and get a new one. No messing around with the stuff inside. It's strictly taboo for the driver and unit mechanic.

When you check your batteries and find that one's bad, it's always best to turn them in for another pair. Batteries have to work in matched pairs—matching 'em is a job for your shop. When you turn both batteries in, it doesn't necessarily mean they're going to be

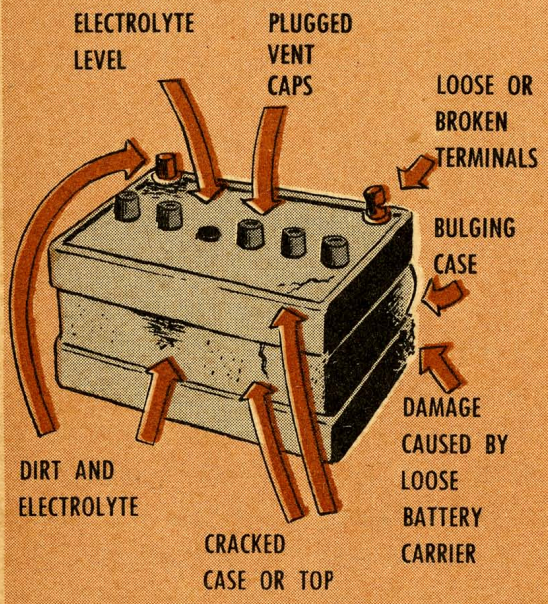
scrapped. The ones that are serviceable will be checked, matched and re-issued in pairs.

Before testing out your entire 24-volt system, it'd be best to hook up your meters and adapters according to Fig. 1. Then you'll have everything ready for the whole series of tests and won't have to stop in the middle to make a connection.

YOUR BATTERY COMES FIRST

The things to look for when checking out your battery are how it looks on the outside, how it acts on the inside and how it puts out.

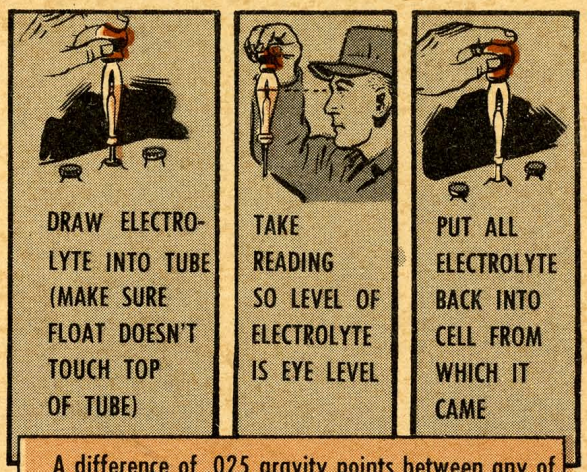
HERE'S WHAT TO LOOK FOR ON THE OUTSIDE



These are things that'll turn a bright battery into a deadhead. If you notice any of these defects, fix them up pronto, if you can. If things are too far gone, turn both batteries in for another pair.

HYDROMETER TEST

To find out how your batteries are on the inside, you first make a hydrometer test. Check each cell in each battery this way—



A difference of .025 gravity points between any of the cells of a battery means she's had it. So, turn her and her running mate back in.

When you get the specific gravity of all six cells for each battery, add them up and divide by six. This'll give you the average specific gravity for that battery. Do the same thing for the other battery. If there's more than .025 difference between the average of the first and the average of the second battery, something's wrong. So, don't ask questions. Turn both batteries in for another pair.

Other things to look for when making the hydrometer test are—

1. The specific gravity of each cell. If the specific gravity is 1.225 or below, give the old box a charge. After charging, if she doesn't go above 1.225, turn your batteries in for another pair.

2. If the electrolyte is dirty or discolored, turn your batteries in for another pair.

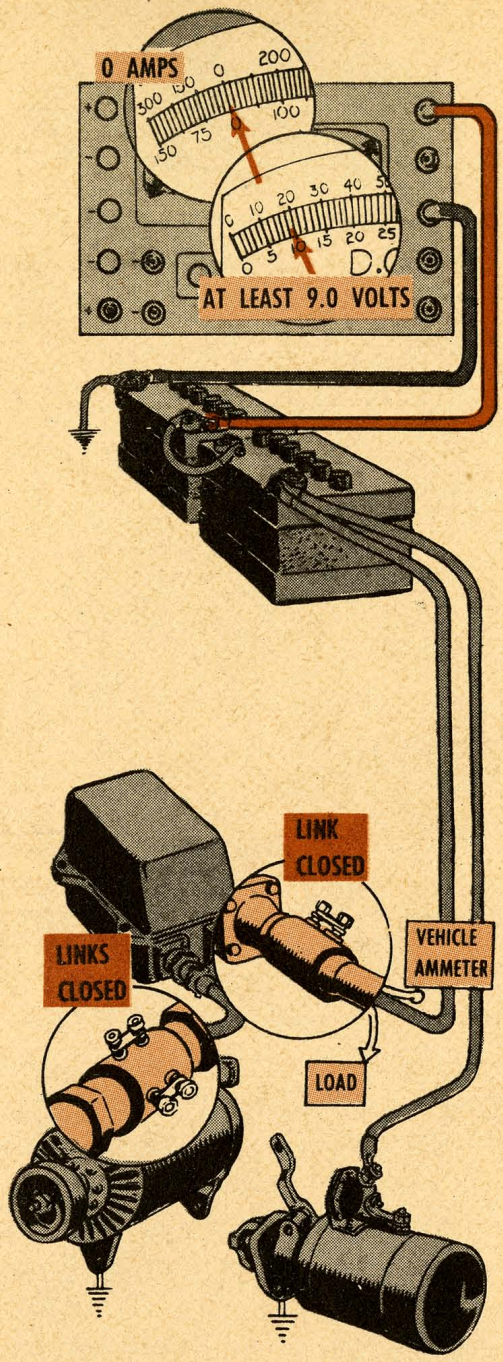
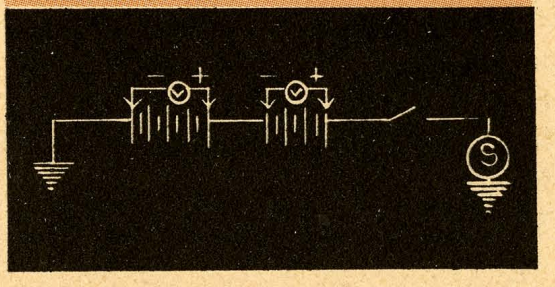


FIG 2– Hookup for battery-capacity test. Did you warm your engine up before making these connections?



The specific gravity reading of any battery will change as the temperature changes. In your hydrometer there's a thermometer which records the temperature of the electrolyte. You can read the hydrometer straight if the temperature scale reads 80 degrees. For every 10 degrees below 80, subtract .004 from the reading your hydrometer gives you. For every 10 degrees above 80, add .004 to the hydrometer reading.

For example, let's say your hydrometer reads 1.265. But the thermometer in your hydrometer records the temperature of the electrolyte as 95 degrees. Your true hydrometer reading, then, would be 1.271—.004 added for every 10 degrees above 80. You've got a temperature reading of 15 degrees above 80, so you'll add .006.

BATTERY-CAPACITY TEST

The last test you make on your battery is the battery-capacity test. This tells you whether your battery is putting out the right amount of current. Hook up your low-voltage circuit-tester (one battery at a time) according to Fig 2.

Now crank your engine with the ignition switch off for not longer than 30 seconds. If you get a voltmeter reading of 9.0 volts—no sweat—your battery's cooking with gas. Do the same thing for the other battery. Readings between batteries should be within .2 volt. If they're more, your batteries aren't working right together. So, get them back to supply and get another pair.

For example, if one of your batteries should read 9.6 and the other 9.4, you're OK.

If you get a reading below 9.0 exchange your batteries.

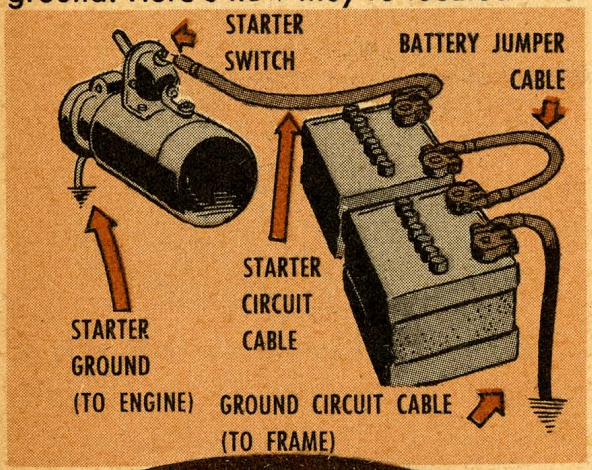
TESTING THE BATTERY CABLES

Now that you've made sure your batteries are in good shape, your next step is to test the cables. These cables are your "channels of supply," and you've got to check them out to make sure the juice from your battery gets to the parts that need it.

Test these three cables—

The starter-circuit cable
The battery-jumper cable
The ground-circuit cable

You'll also check out your starter ground. Here's how they're located—



STARTER CABLE

To test the starter circuit cable, first make a set of test prods—short lengths of ⅛-in welding rod or six penny nails ground to a long, slim point. You drive one into your battery (+) post with a light hammer. This measures the voltage right at the post and will show up a loose or dirty cable clamp.

Now, make your hookup according to Fig 3.

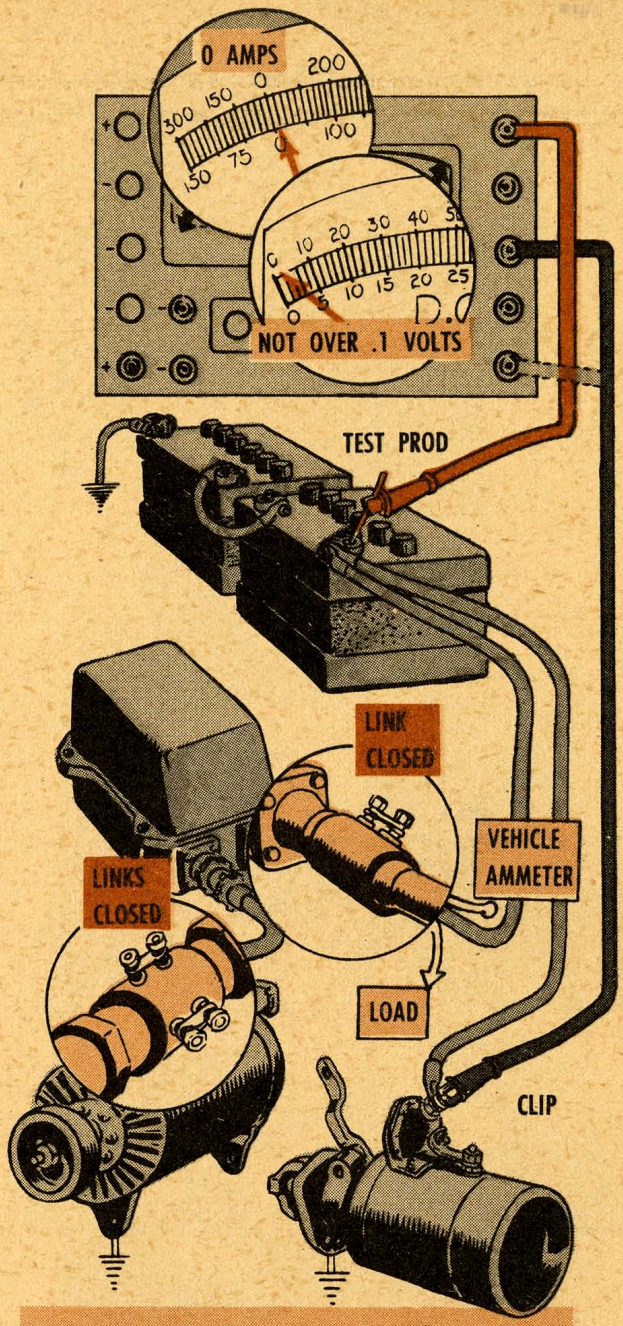
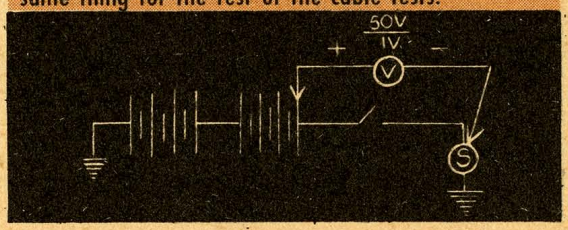


FIG 3—Hookup for starter circuit cable test. Notice that the negative lead's in the 50-volt hole. That's to insure that if you've got a lot of resistance in the line your voltmeter won't bust a gut trying to record it. If you get no reading in the 50-volt hole, take the lead out and put it into the 1-volt hole. You'll do the same thing for the rest of the cable tests.



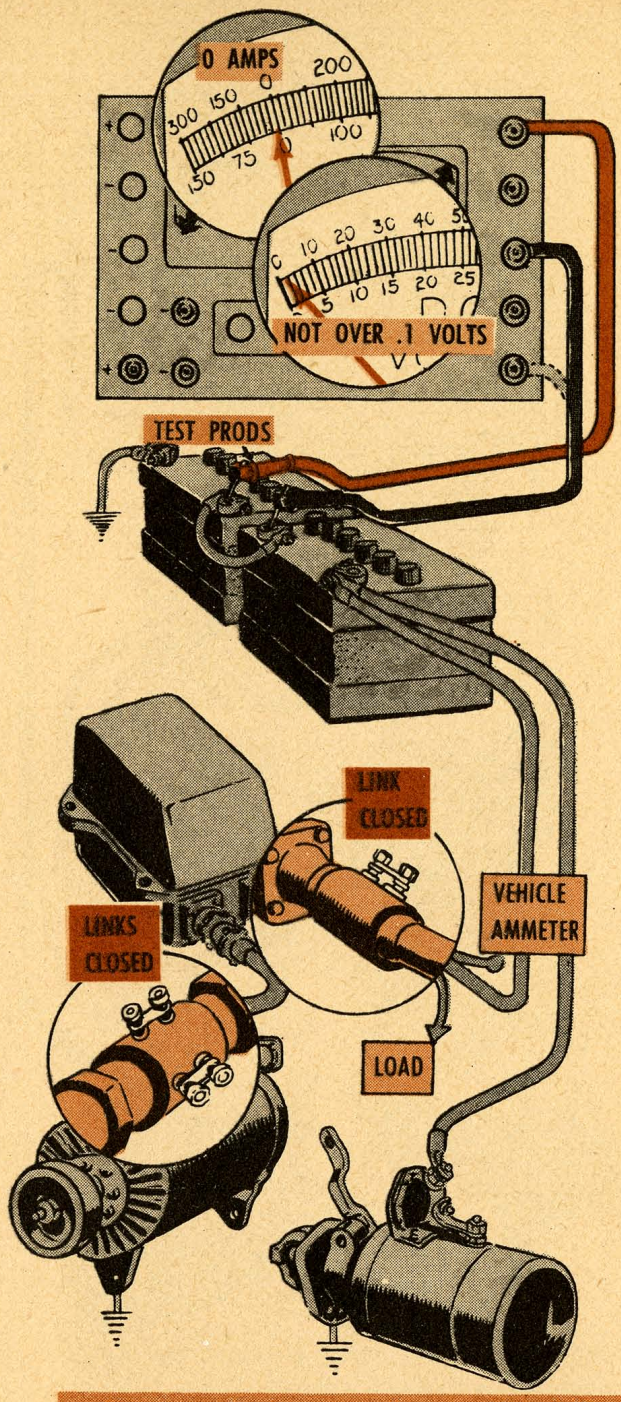
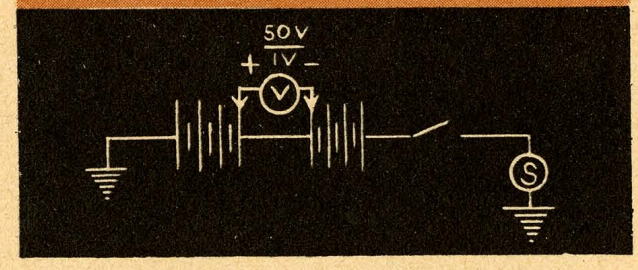
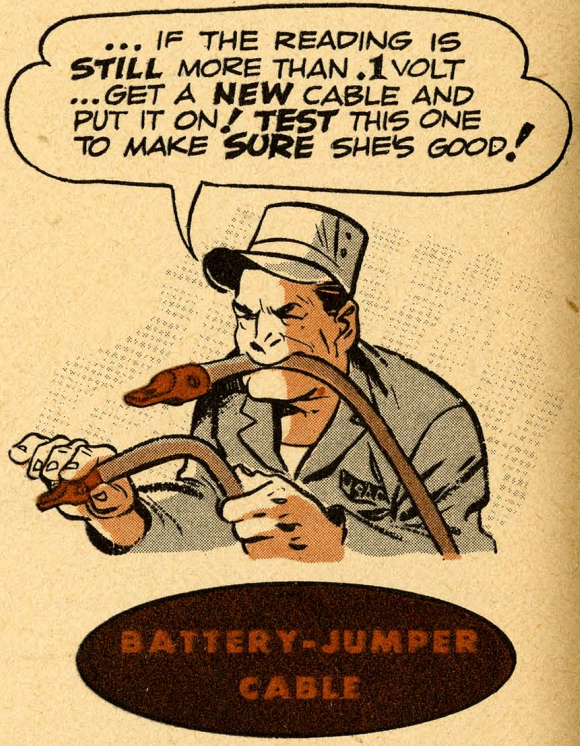


FIG 4—Hookup for battery-jumper cable test. If you get no reading in the 50-volt hole, take the lead out and put it in the 1-volt hole.



Crank the engine with the ignition switch off for not more than 30 seconds. If your voltmeter moves to more than .1 volt while cranking, take off the cable, clean and inspect it, clean all grease and corrosion from the battery post and put the cable back on—tight. Then retest.



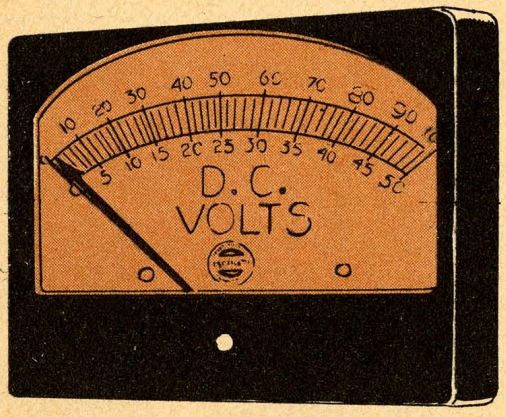
Put both test prods to work—one in the plus pole and one in the negative to which your jumper cable is hooked. Now, hookup your tester according to Fig 4.

You'll run this test just like the starter-circuit cable test. Crank the engine with the ignition off for not more than 30 seconds. The voltmeter shouldn't read more than .1 volt. If it does, take the cable off, clean and inspect it, clean the battery posts, put the cable back on and make sure the terminals are tight. Then retest. Still get more than .1 volt reading? Get a new cable and retest to make sure it's a good one.

GROUND-CIRCUIT CABLE

To test the starter-ground-circuit cable, use this hookup—but put your prod in first like it shows in Fig 5.

You'll do this test the same way as the last two.



Crank your engine. If you get a reading of more than .1 volt, take off the cable,

clean it, look it over, clean the battery post, put the cable back on and tighten each connection. Then retest. If the voltmeter reads more than .1 volt again, get a new cable and retest.

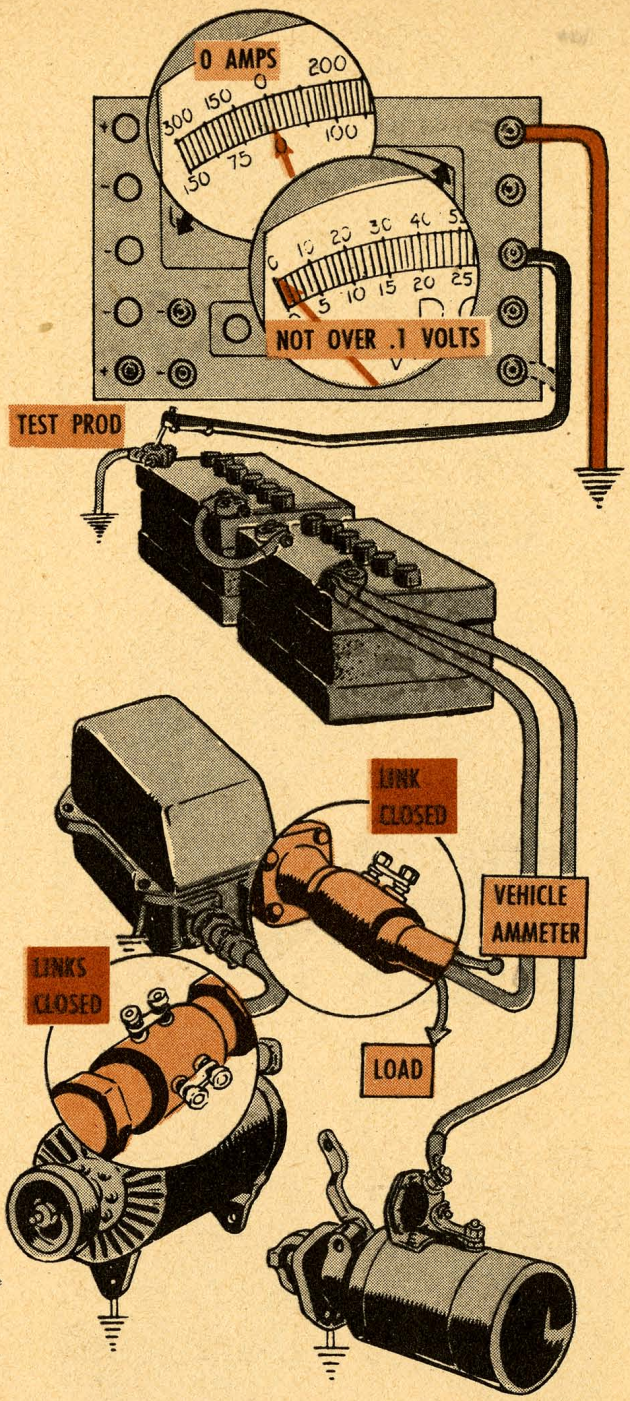
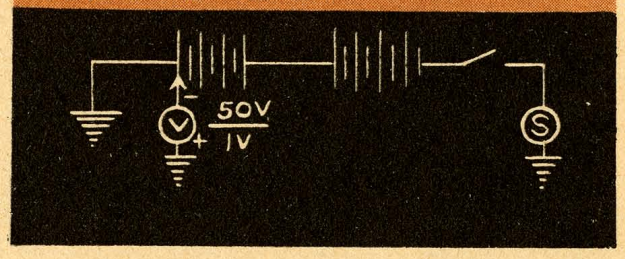


FIG 5—Hookup for ground-circuit cable test. If you get no reading in the 50-volt hole, take the lead out and put it in the 1-volt hole.



STARTER-GROUND

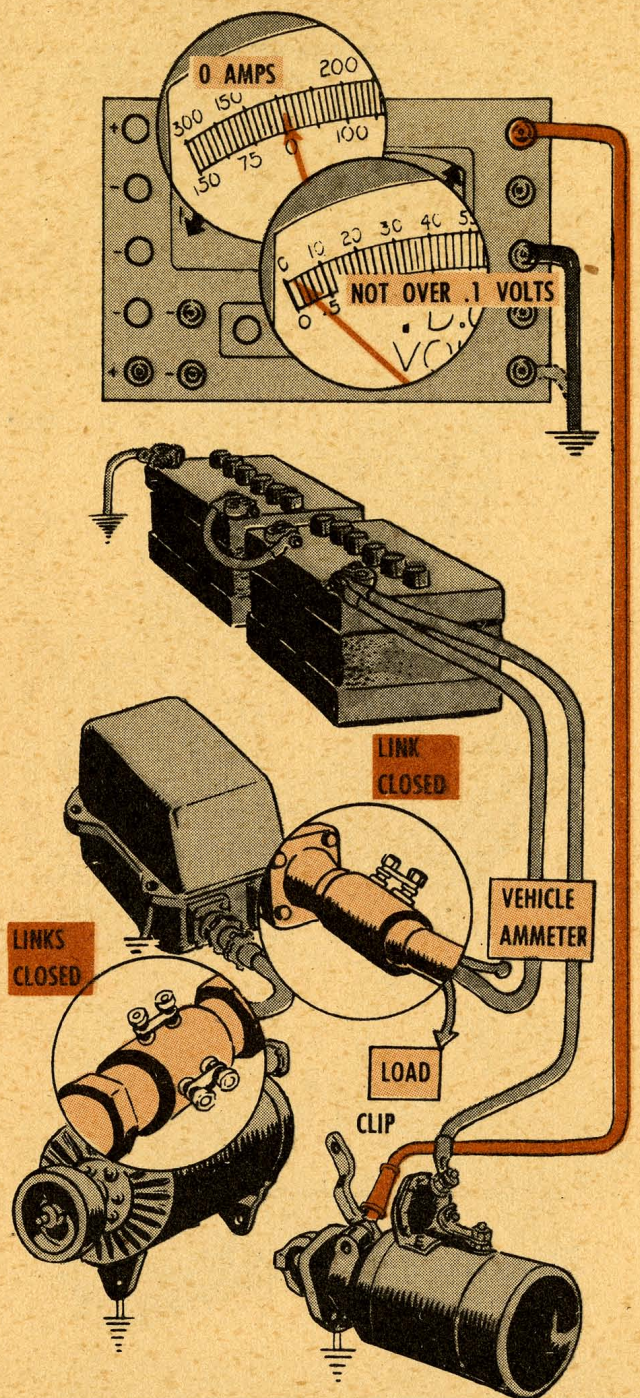
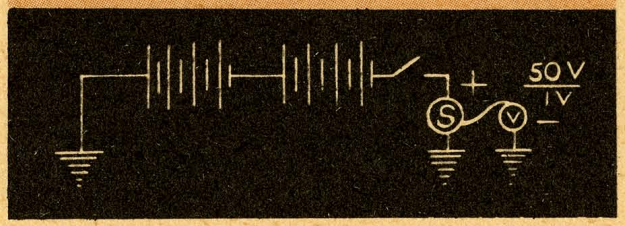


FIG 6— Hookup for starter-ground test. If you get no reading in the 50-volt hole, take the lead out and put it in the 1-volt hole.



Make this hookup like it shows you in Fig 6. But before you start, here are a few things to remember:

Your voltmeter positive lead will be hooked to the starter ***frame. Don't*** hook it to the starter attaching bolts or this test won't be accurate.

Your voltmeter negative lead will be attached to the engine block—to a ***bare*** spot. If you can't find a bare spot, scrape some paint off the block.

O'course you'll start by sticking your voltmeter negative lead into the 50-volt scale, like you did for the rest of the tests. If you get no reading, drop the lead to the 1-volt scale.

Crank your engine with the ignition switch off for not longer than 30 seconds. You should have less than .1 voltage drop. If you get more, remove the starter and clean both the starter flange and the engine block real well—no paint, no grease, no dirt. Then, put the starter back and tighten it. Repeat the test.

IS YOUR STARTER IN TOP SHAPE?

Only one test is needed to test out your starter—the starting-motor amperage-draw test. This test will tell you if your starter's in the kind of shape it's supposed to be. If it isn't take it off your truck, get it back to supply and get a new one.

To make this test, use the external shunt found in every low-voltage circuit-tester kit. Fig 7 shows how the hookup for the test is made.

Crank the engine with the ignition switch off for not longer than 30 seconds. A good starter will make your ammeter read anywhere from 45 to 60 amps ***steady***. But it may kick up to 90 amps until the engine starts to turn. If the amperage ***stays*** at less than 45 or more than 60 amps—replace the starter.

THE GENERATOR AND REGULATOR

When it comes to testing out your generator and regulator systems, there're five tests to make—

The generator-output test
The charging-circuit resistance test
The charging-circuit-ground-resistance test
The generator voltage-regulator test
The reverse-current test

All your tests for the generator and regulator are made ***right at the generator.***

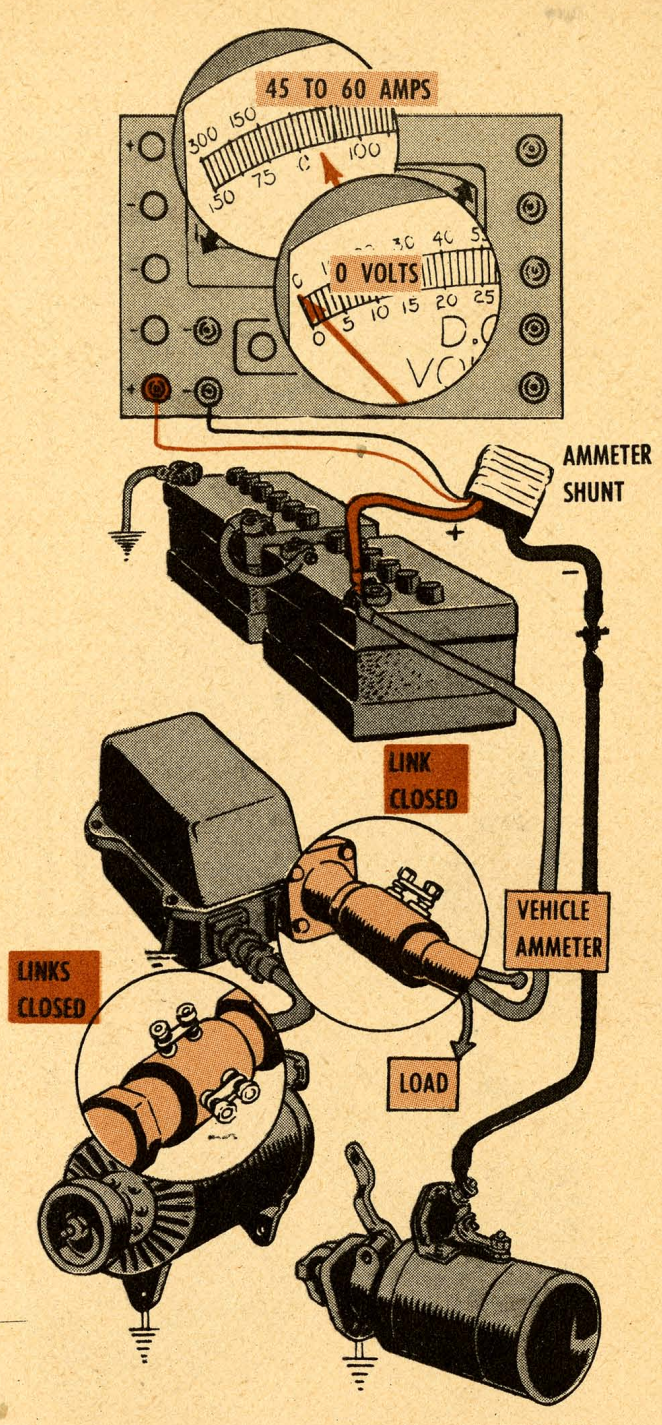
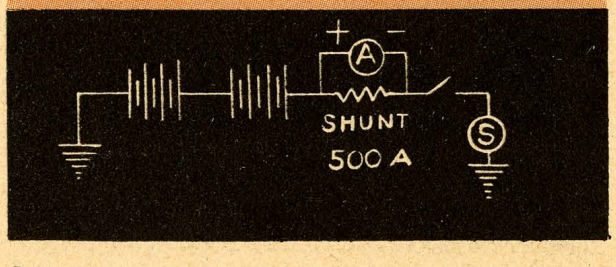


FIG 7—Hookup for starter-motor amperage-draw test.



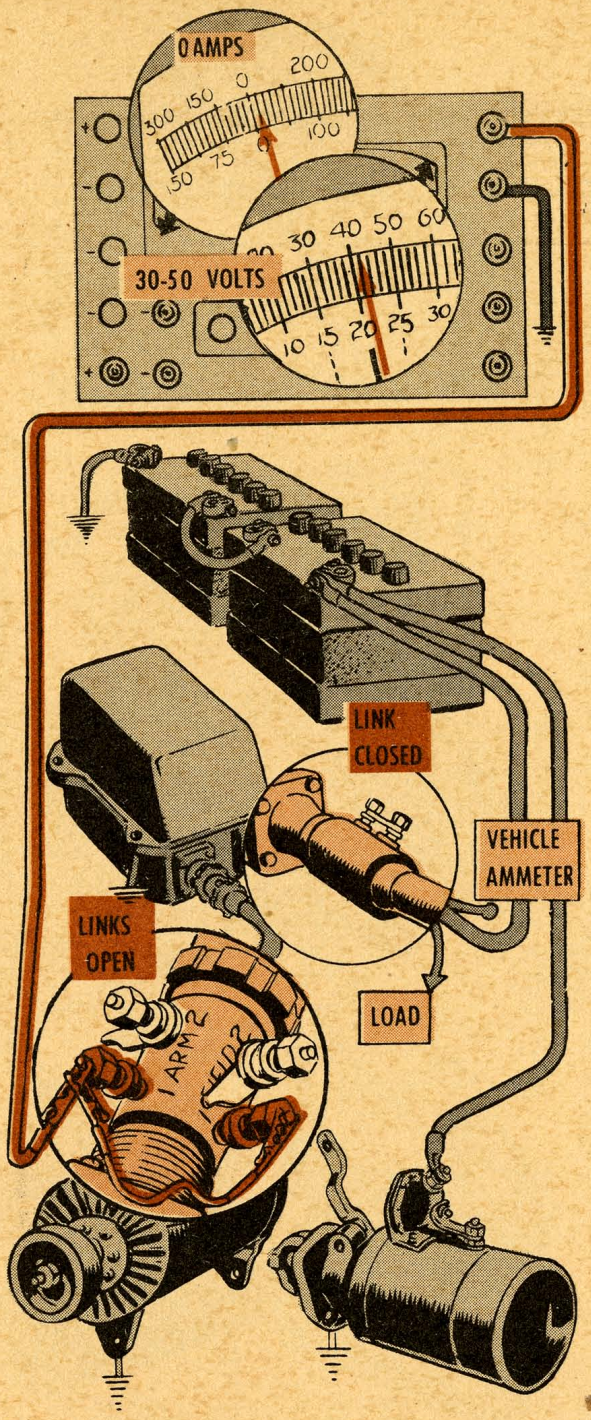
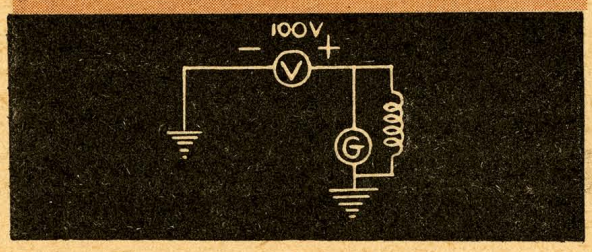


FIG 8—Hookup for generator-output test.



GENERATOR-OUTPUT TEST

This test, just like it's called, tells you whether your generator is putting out or not. If your meters don't read right, all you've got to do is take your generator off and get a new one. You don't fuss around with the thing, trying to discover why it won't work.

Make your hookup according to Fig 8.

After you've got the hookup, do the next step very, very carefully.

Start your engine—and ***slowly—but very slowly***—increase your speed—no gassing. If you do it too fast, there's a good chance you'll burn up your generator and have your meter parts scattered hither and yon.

Read the meter. Your voltmeter should be putting out at least 30 volts. When this reading has been reached, or maybe a little beyond, cut your engine fast.

Never let your engine speed increase to a point where your output is over 50 volts.

If you can't get this reading, you know something's wrong with your generator—she's not putting out enough juice. So, get a new one.

The next two tests—the charging-circuit-resistance test and the charging-ground-circuit-resistance test—will tell you whether your connections to and from the generator and regulator are in good shape.

CHARGING-CIRCUIT RESISTANCE TEST

For this test, the charging-circuit resistance test, you've got to discharge your batteries a bit so they'll accept a charge. You do this by cranking the engine with the ignition off for three periods of 30 seconds each, allowing 3 to 5 minutes between periods to let the starter cool.

Start your engine with the voltmeter negative lead ***disconnected*** from the voltmeter and laid aside where it cannot ground on the truck. When your ammeter indicates charge, bring the voltmeter negative lead up and touch the 50-volt scale. You should show no appreciable voltage. Then, drop the lead to the 1-volt scale.

If your voltmeter reads over .3 volt, you've got to check for clean pins and tight connections in the charging circuit. When everything is clean and tight, check again. If you still read over .3 volt, get yourself a new generator-to-regulator cable. If that doesn't fix it, replace the regulator, put the old cable back on and test again.

Here's a word of caution: You ***must*** start the engine and show a charge on your ammeter before connecting the voltmeter when making this test, because you've got to get the contacts closed on the reverse current relay in your regulator. If you don't, you'll have a 24-volt current running reversebassackwards through your voltmeter—Statement of Charges, bud.

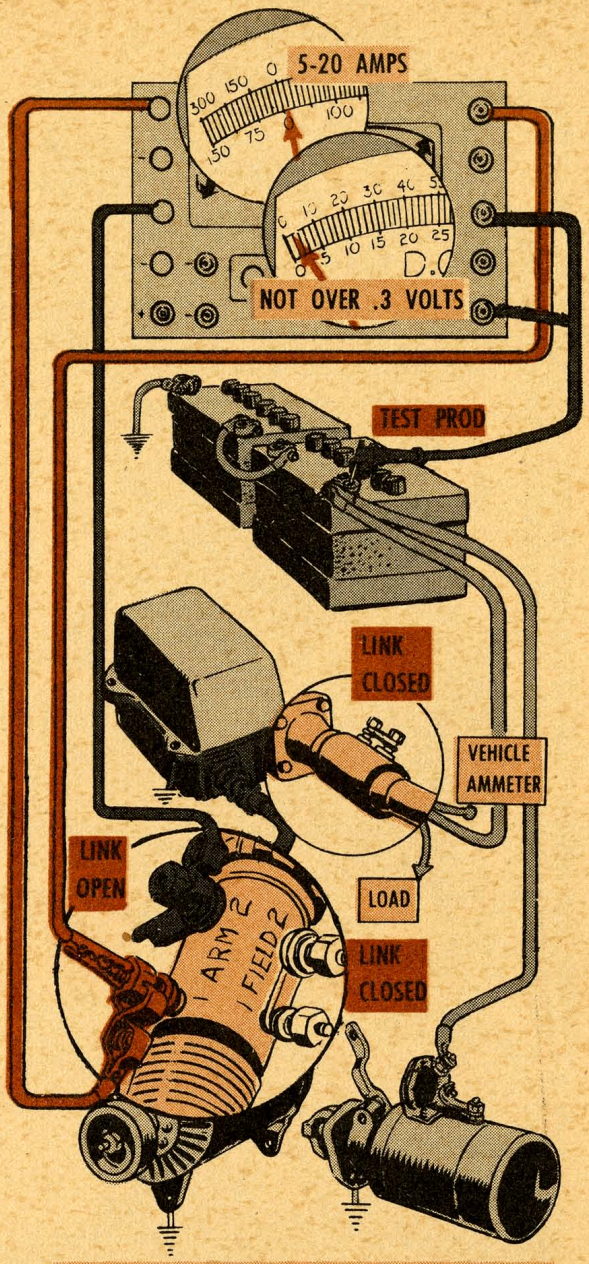
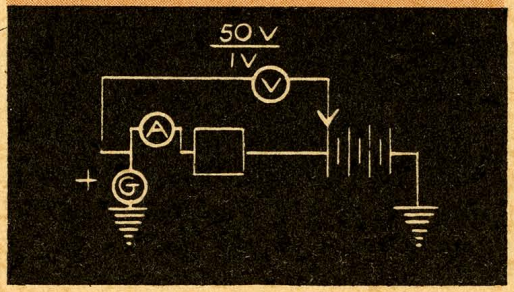


FIG 9—Hookup for charging-circuit resistance test. **Don't** connect the voltmeter negative lead to the voltmeter terminal until engine is running and ammeter shows charge, or you'll get a 24-volt reverse current through your voltmeter.



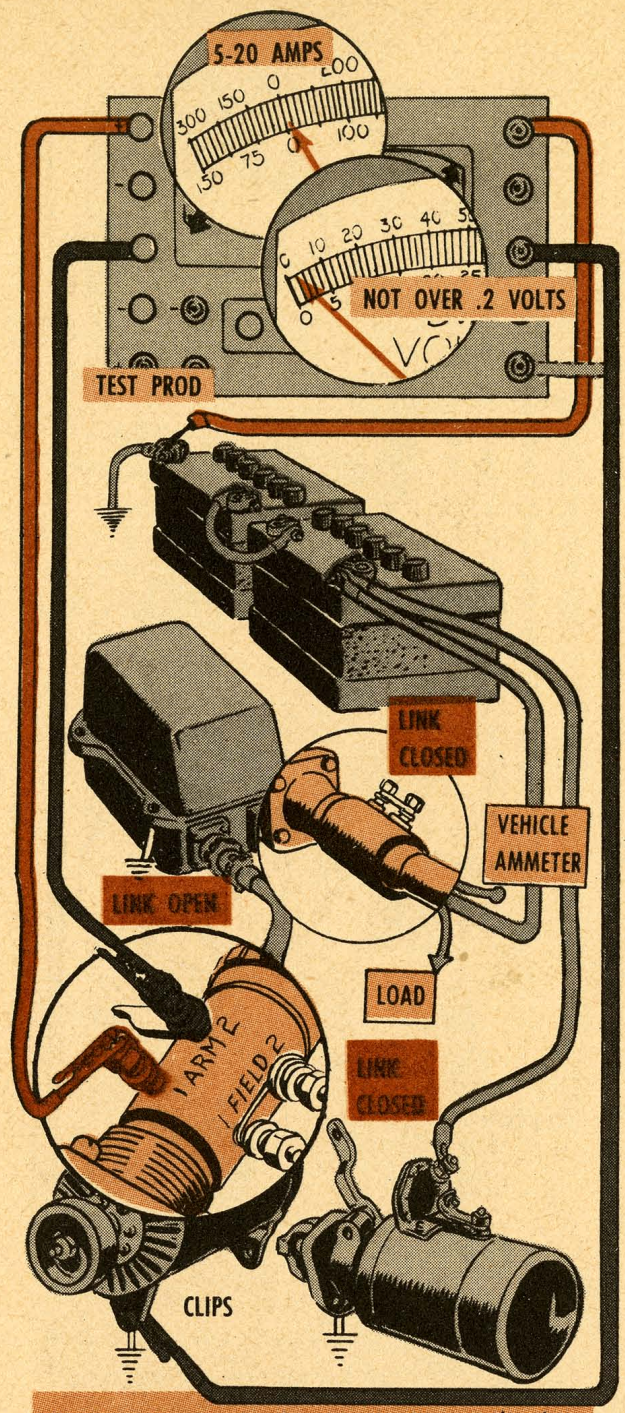
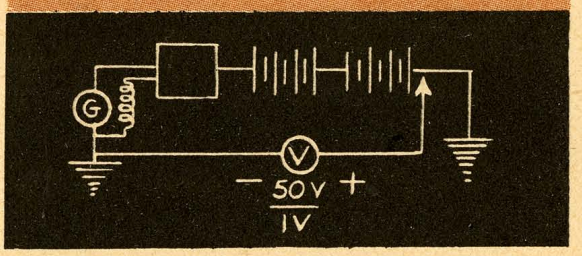


FIG 10—Hookup for charging-circuit ground-resistance test. If you get no reading in the 50-volt hole, take the lead out and put it in the 1-volt hole.

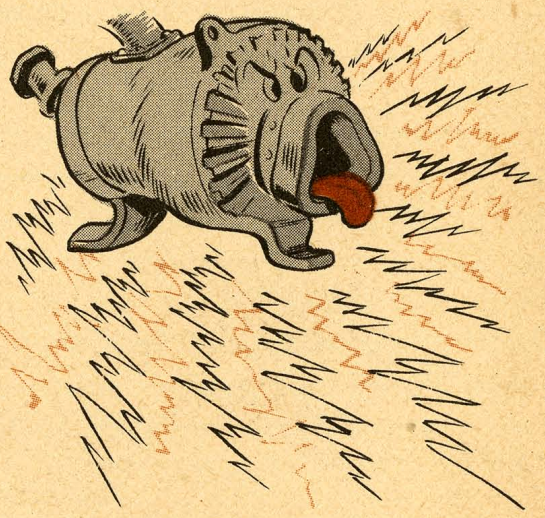


CHARGING-CIRCUIT-GROUND-RESISTANCE TEST

Make your hookup the way it shows in Fig 10.

Discharge your batteries once more by cranking with the ignition off—then start your engine. Set the throttle so the ammeter shows some charge. Your voltmeter should read no more than .2 volt. If it does, check and clean the generator to engine mounting and the battery ground cable to frame connection. Are the ends of connections in shape? If not, change them. Then run the test again. If you still get more than a .2 volt drop, take your truck back to Ordnance.

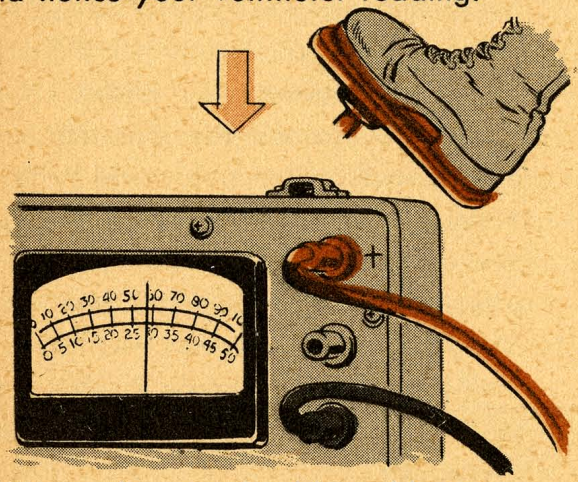
Your generator's the idjit that can really go wild in your electrical system. While running, it just keeps pouring out juice and must be regulated before it suffers a heart attack from overwork. That's where your regulator comes into play. If the regulator isn't operating the way it should, your generator'll just keep producing until pop goes the weasel.



GENERATOR-VOLTAGE TEST

This test'll tell you whether your regulator is controlling your generator and if your voltage regulator unit in the regulator box is operating as it should. Fig. 11 shows the way to make the hookup. Leave your regulator-adapter link closed and start your engine. Then open the link.

From idle increase your speed slowly and notice your voltmeter reading.



Your voltmeter should read between 27 and 29 volts and hold steady as you increase the speed of your engine. If the reading is above or below this or if the needle waves back and forth, get yourself a new regulator.

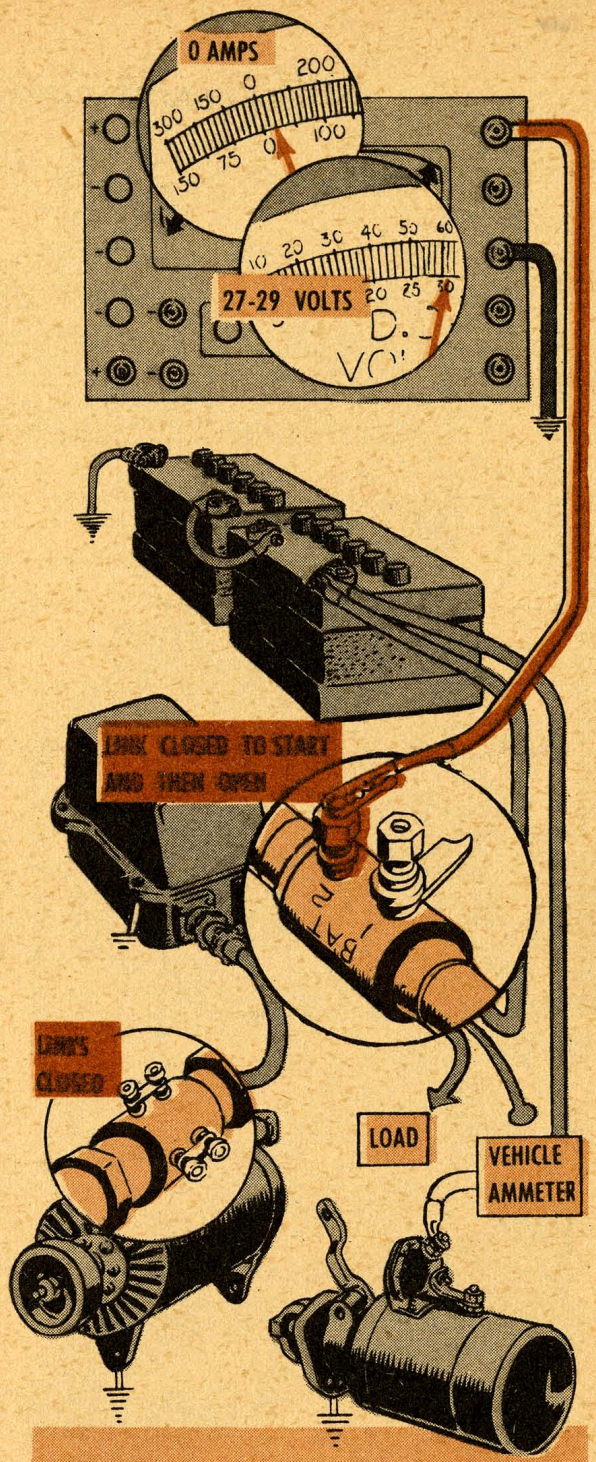
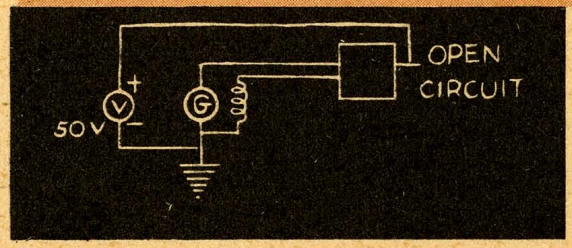


FIG 11—Hookup for voltage-regulator test.



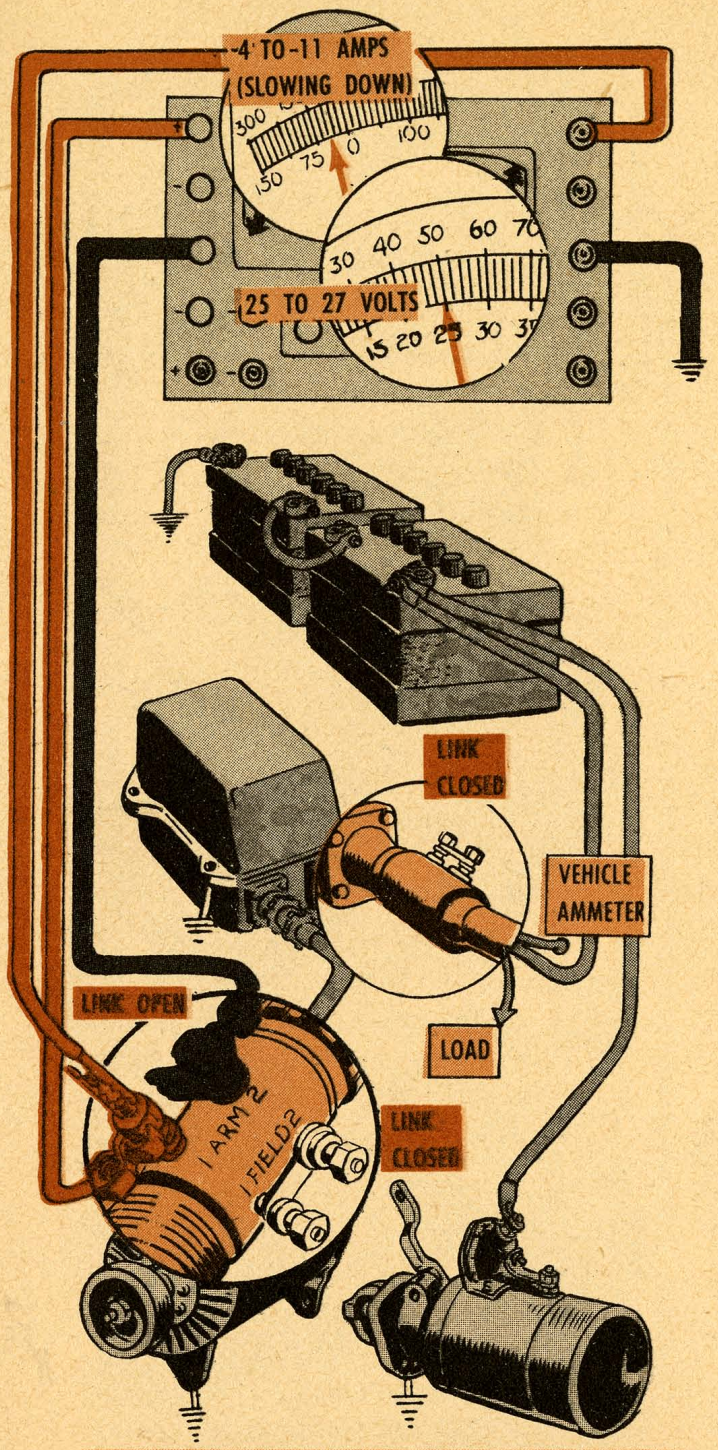
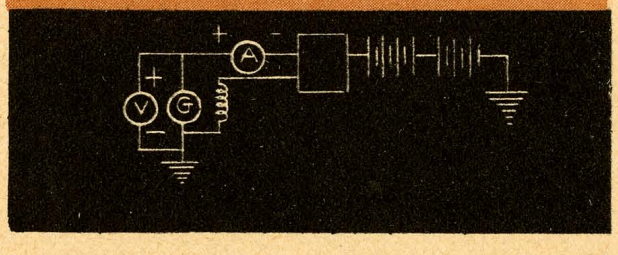


FIG 12— Hook up for reverse-current-relay test.



REVERSE-CURRENT-RELAY TEST

This is the last test on your 24-volt system. It'll tell you whether your cut-out relay points are operating properly in your regulator. Make the hookup according to Fig 12.

Start your engine and reduce the idle speed by the carburetor idle-speed-adjusting-screw until your cut-out relay points open (your ammeter will read zero). Increase your engine speed and watch your voltmeter. When it hits 25 to 27 volts, your relay points should close, and your ammeter needle jump up off zero.

Reduce the speed gradually and read your ammeter at the instant the points open again. The points should open when the ammeter reads 4 to 11 amps discharge (beyond zero). If you don't get these readings, change your regulator.

It may happen that you can't get your engine down slow enough to make your generator cut-out. Don't worry—as long as your ammeter shows anywhere up to 11 amps discharge and ***then comes back to zero***, you're OK. But if it doesn't come back to zero, get the ammeter lead off the adapter ***quick***—it'll arc on you. Then, change the regulator.

That's all there is to it. Your electrical system is all checked out. Everything should now be hitting on all 24-volts, that is.

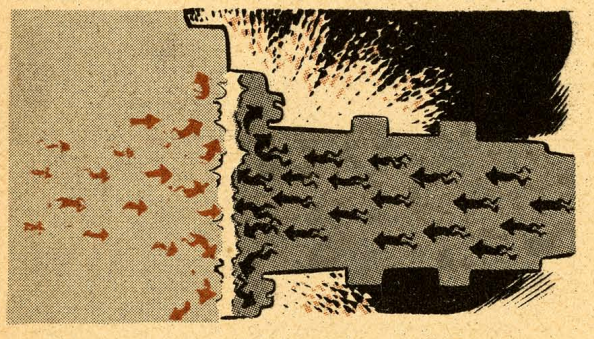
REVERSE POLARITY

Ever think what'd happen if the world suddenly flipped over so the south pole was where the north pole is and vice versa? Believe it or not, there's a lot of people who are always getting their poles crossed and causing a topsy-turvey, upside down, crazy, mixed-up, bassackwards world.

These're the people who check out a vehicle's electrical system, trying to keep it in top shape, and then have the vehicle drop dead on them.

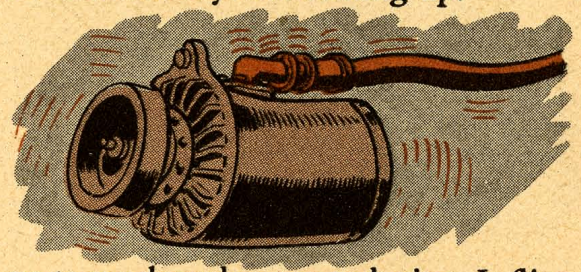
What happened? That old sneaker Reverse Polarity went to work on the generator, regulator and battery. One new electrical system coming up.

Reverse polarity is nothing more than getting your poles mixed. It causes electrons to shoot off in opposite directions with the result being that those little buggers are at the wrong place at the wrong time. Then, you're left holding the bag for a new generator, a new regulator or a new battery—or maybe all three.

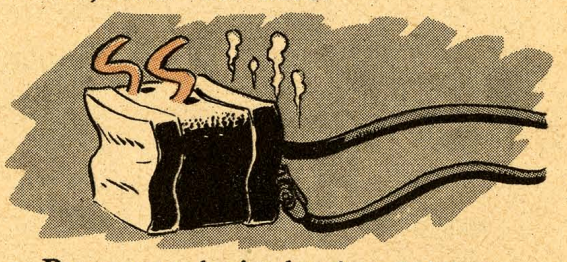


When either the generator has the wrong polarity or the battery's been connected backwards, the regulator relay points will soon be put on the blink and burn out the regulator.

With your regulator burned out and not working, your generator can really



go to work and start producing. It flips its lid and starts turning out current like mad. And, then, it suffers a heat attack from overwork and conks out. With your generator not working, your battery has to do all the work. This poor little box isn't built to put out so much without being charged so it also kicks the bucket. So, where are you? Nowhere, man—nowhere.



Reverse polarity begins right at your generator or at your battery. The polar-

ity of a generator is changed by sending current through the field in the direction opposite to the way it normally flows. Battery polarity is changed by hooking the battery cables up backwards.

Here're the most common ways generator polarity is reversed:

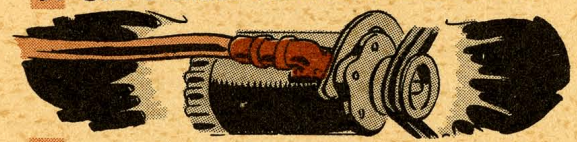
1. Using a test lamp to check the fields for ground or continuity.

2. Using an ohmmeter to check field resistance.

3. Connecting leads backwards.

4. Installing or connecting the battery backwards.

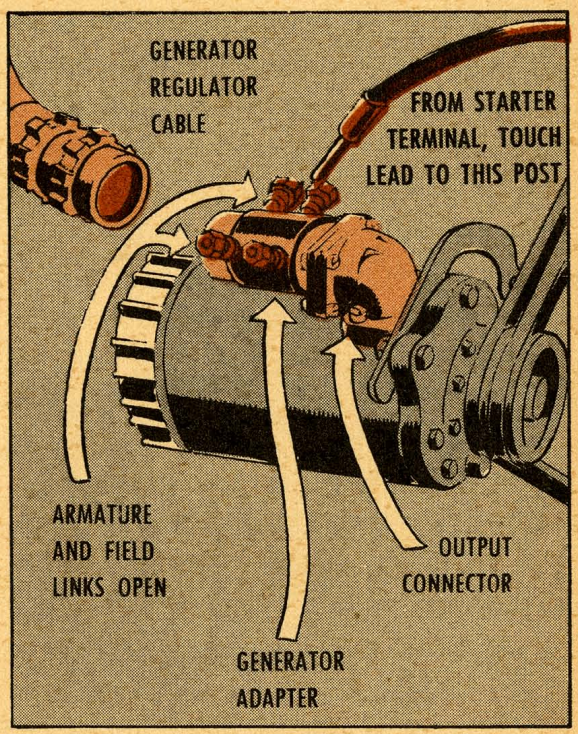
5. Slave cable connections crossed.



6. Failing to correctly polarize the generator after it has been repaired or tested before putting it back into the vehicle.

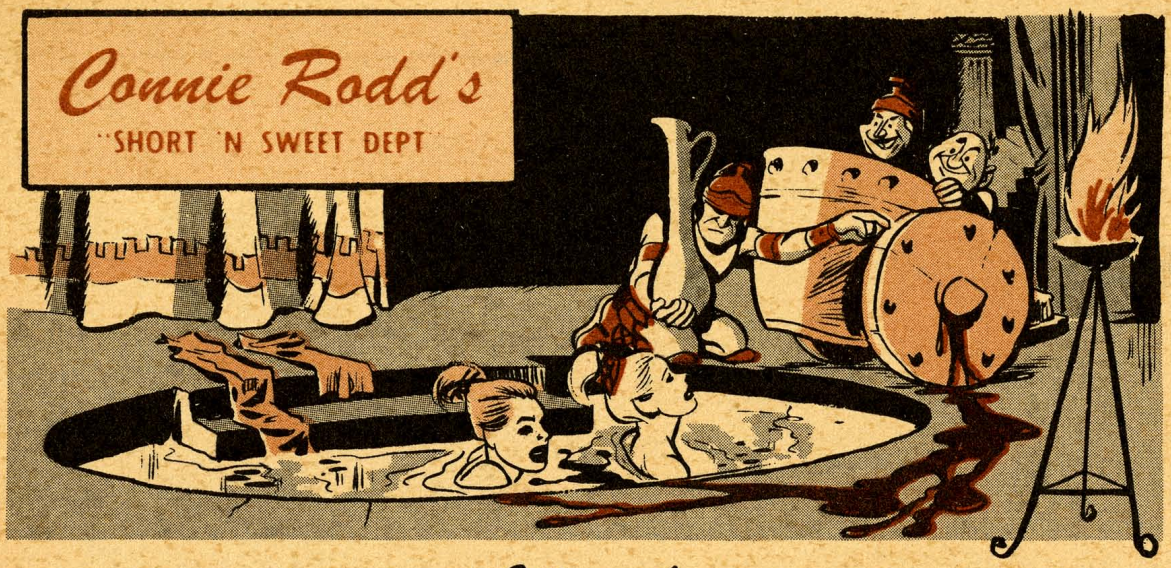
The way to be safe and make sure your polarity isn't reversed is a simple operation. You can be on the lookout for the things mentioned above, but you'll only be half-safe.

The best thing to do after doing any work on the electrical system is to install a generator adapter from the adapter kit 17-A-3150 into the generator output elbow (you've got to unhook your generator-regulator cable to do this). Make sure the field and armature links of the adapter are open. Then attach one end of a jumper cable (any piece of wire) to the starter terminal. With the other end, touch the field post of the adapter. This is what is called flashing your field.



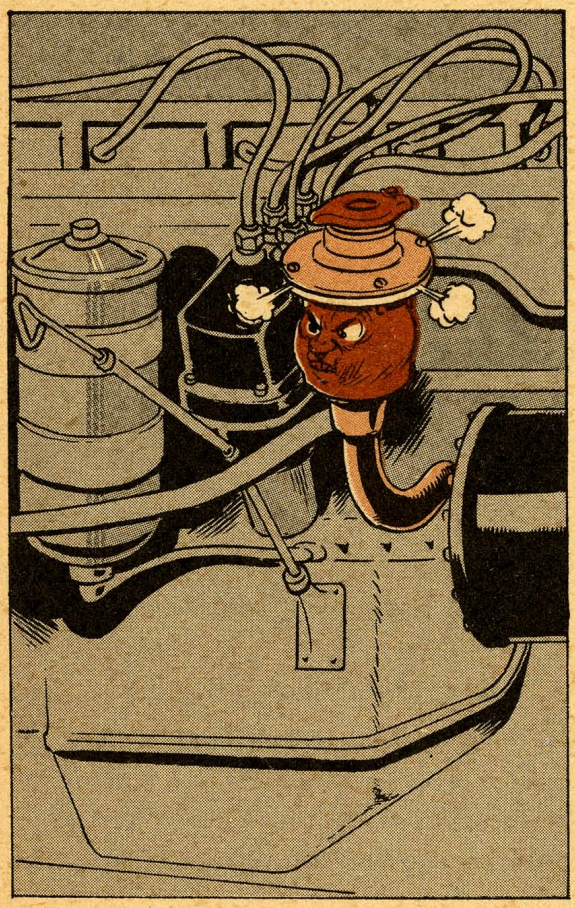
That's all there is to it and you're in business. The north and south are where they should be—and never the twain shall meet.

You'll want to meander through the TM for your own vehicle.



Oil rush

It's been a knock-down, drag-out fight trying to get some guys to believe that too much oil in a crankcase is as bad as not enough.



You all know what happens when you take on too much suds.

It's pretty much the same way with flooding oil into your crankcase until you hit over the FULL mark. A crankcase needs a certain amount of room to breathe, and when it's too full it starts choking. The crankcase vent system gives relief to just so much excess oil. What's left finds another route of escape—past the intake valves and rings, where it ends up as carbon. And carbon is as bad as an ulcer.

Some guys think they've found the eighth wonder of the world when they discover that their oil level has gone down a pint and stays there. Not a wonder—it just means they've overloaded their crankcase from the start and that excess oil has escaped by fair means or foul. A good thing to remember is that the crankcase will hold on to what it needs and no more.

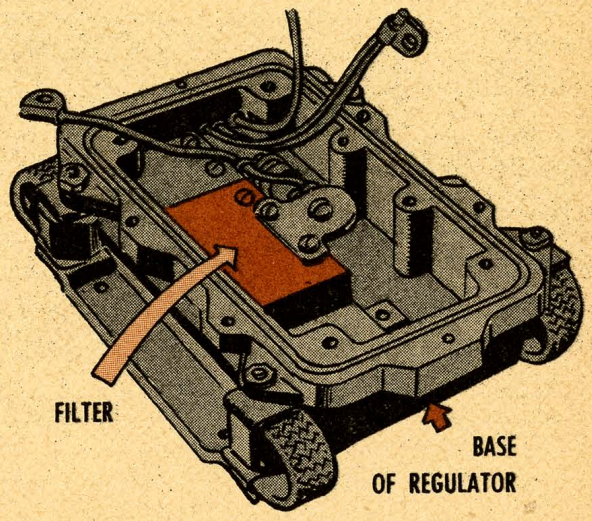
So, give your TM and LO a gander to see what the correct amount of oil is for your vehicle—and go by it.

Where is it?

A "now-you-see-it, now-you-don't" spark when you connect the battery ground cable to the battery's negative post on ¾-ton trucks and Jeeps has been causing a lot of puzzling looks on some faces.

It all has to do with the Auto-Lite (VBC 4002 UT) regulator.

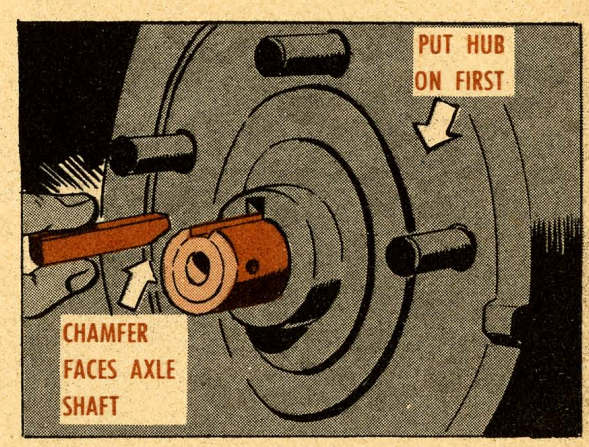
The scoop is that this regulator has a filter in its base which is there for radio-noise suppression. The condensor part of the filter is pretty large and is connected to the hot side of the cutout relay.



What causes the "disappearing-appearing" spark is a drain on the battery caused by this filter condensor "charging up." When the filter gets its charge, that does it — no more drain.

By now you're probably wondering if this spark causes your batteries to go kaput. Truth is that the slight drain is **not** enough to discharge a battery even tho the spark you get at first may seem strong.

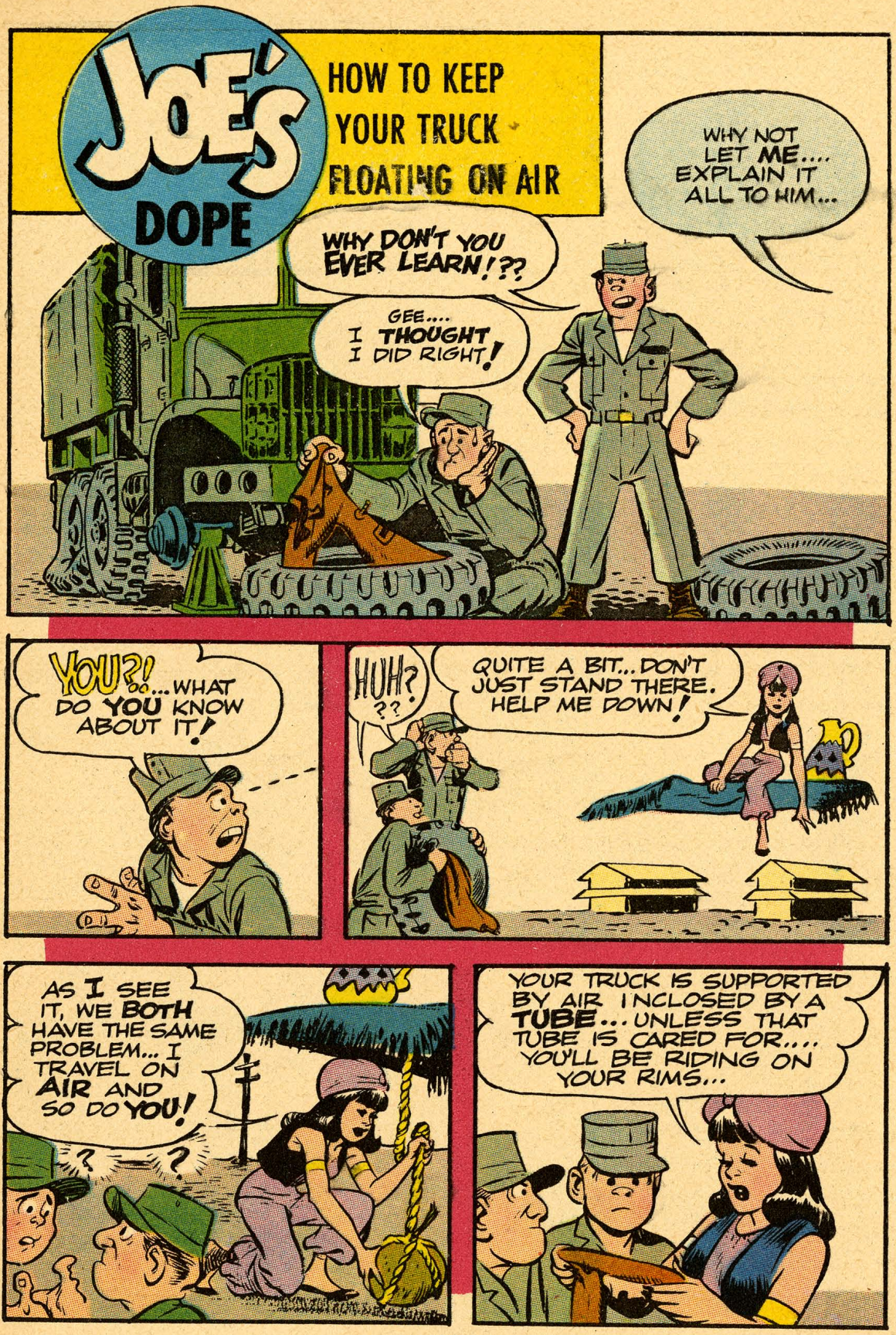
A case of chamfer

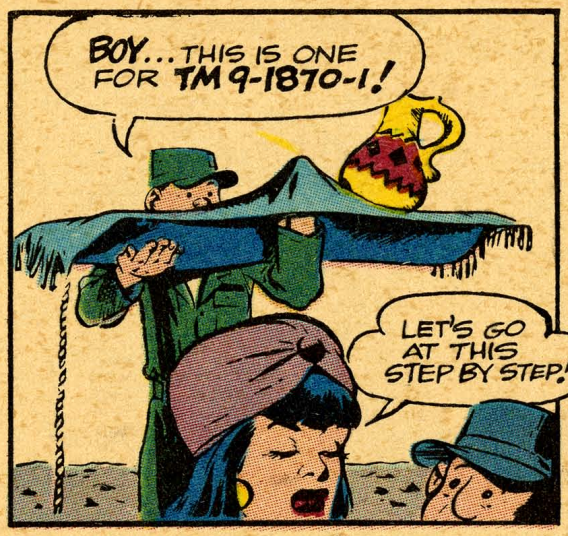


Let's take the case of that rear-axle-shaft key on your M38 and M38A1 Jeeps for a minute. The key has a chamfered end so it'll fit real snug with the chamfer on the rear-axle-shaft.

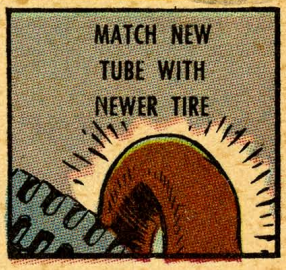
Next time you put your rear-wheel-assembly back together, make sure you put the hub on the axle-shaft before you put the key in. If not, strange things can happen, like your key getting jammed up your shaft so it chews the bejabers out of the oil-seal there.

The way to do it is to put your hub in place, lining up the keyway in the axle-shaft with the keyway in the hub. Then, put your key in, making sure the chamfer goes in first and is facing down toward the keyway in the axle shaft. Now, tap the hub and key into place on the shaft. Strange things can thus be avoided. TM 9-8014 (para 216) tells you all about this.

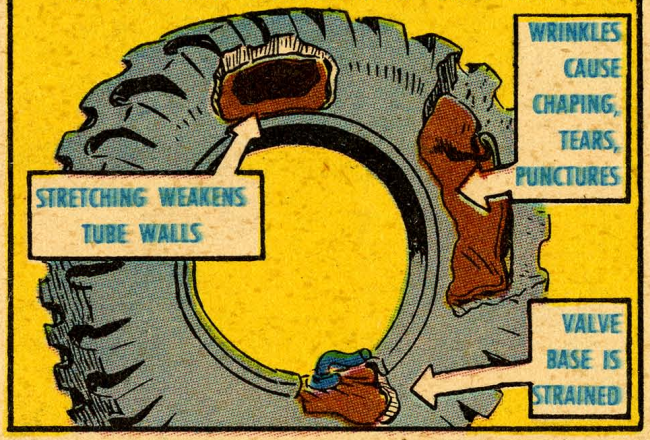

JOE'S DOPE
HOW TO KEEP YOUR TRUCK FLOATING ON AIR
WHY NOT LET ME.... EXPLAIN IT ALL TO HIM...
WHY DON'T YOU EVER LEARN!??
GEE.... I THOUGHT I DID RIGHT!
YOU?!... WHAT DO YOU KNOW ABOUT IT!
HUH??
QUITE A BIT... DON'T JUST STAND THERE. HELP ME DOWN!
AS I SEE IT, WE BOTH HAVE THE SAME PROBLEM... I TRAVEL ON AIR AND SO DO YOU!
YOUR TRUCK IS SUPPORTED BY AIR INCLOSED BY A TUBE... UNLESS THAT TUBE IS CARED FOR.... YOU'LL BE RIDING ON YOUR RIMS...



1 WHEN YOUR TIRE'S WORN DOWN TO WHERE IT'S AT THE POINT OF BEING UNSAFE, CHANGE IT QUICK AND MAKE SURE YOUR TUBE FITS THE NEW TIRE OK. NO WRINKLES. IT'S A GOOD IDEA TO:

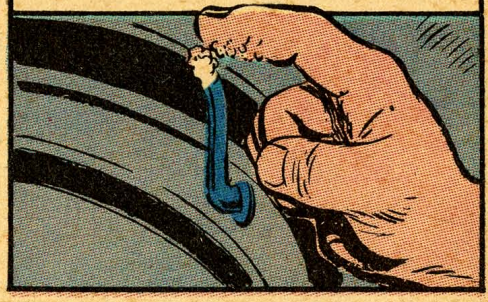


2 NEVER USE A TUBE IN A TIRE LARGER THAN WHAT IT CALLS FOR, OR VICE VERSA...THE FOLLOWING CAN HAPPEN:

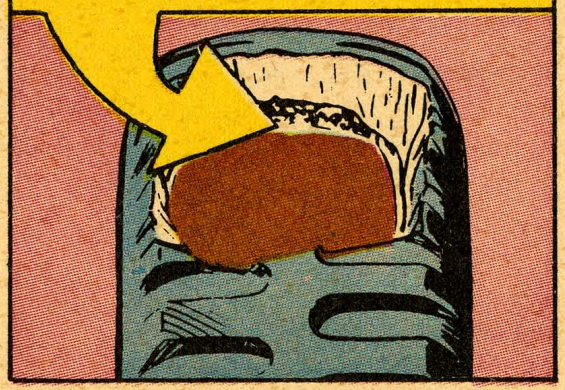


3 IF YOU'VE GOT AN IDEA THE VALVE CORE MIGHT BE SHOT, REPLACE IT. THE VALVE STEMS SHOULD BE PLACED JUST RIGHT.

TM9-1870-1 TELLS YOU WHERE AND HOW



4 WHEN MOUNTING THAT TIRE AND TUBE MAKE SURE THAT BOTH ARE CLEAN...PEBBLES OR GRIT WILL SCRAPE AND CHEW INTO THE RUBBER.



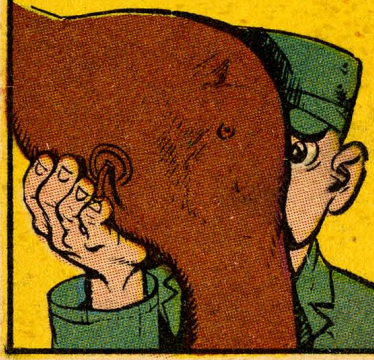
5 USE AN ACCURATE GAGE TO FILL THE TUBE WITH THE RIGHT AMOUNT OF AIR...

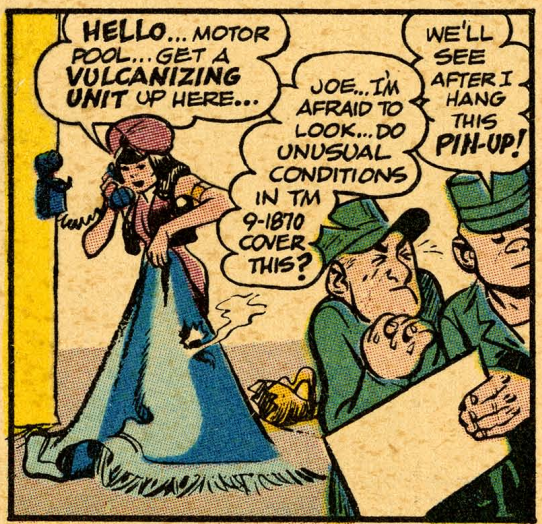
THIS WILL GIVE YOU GOOD TIRE PERFORMANCE

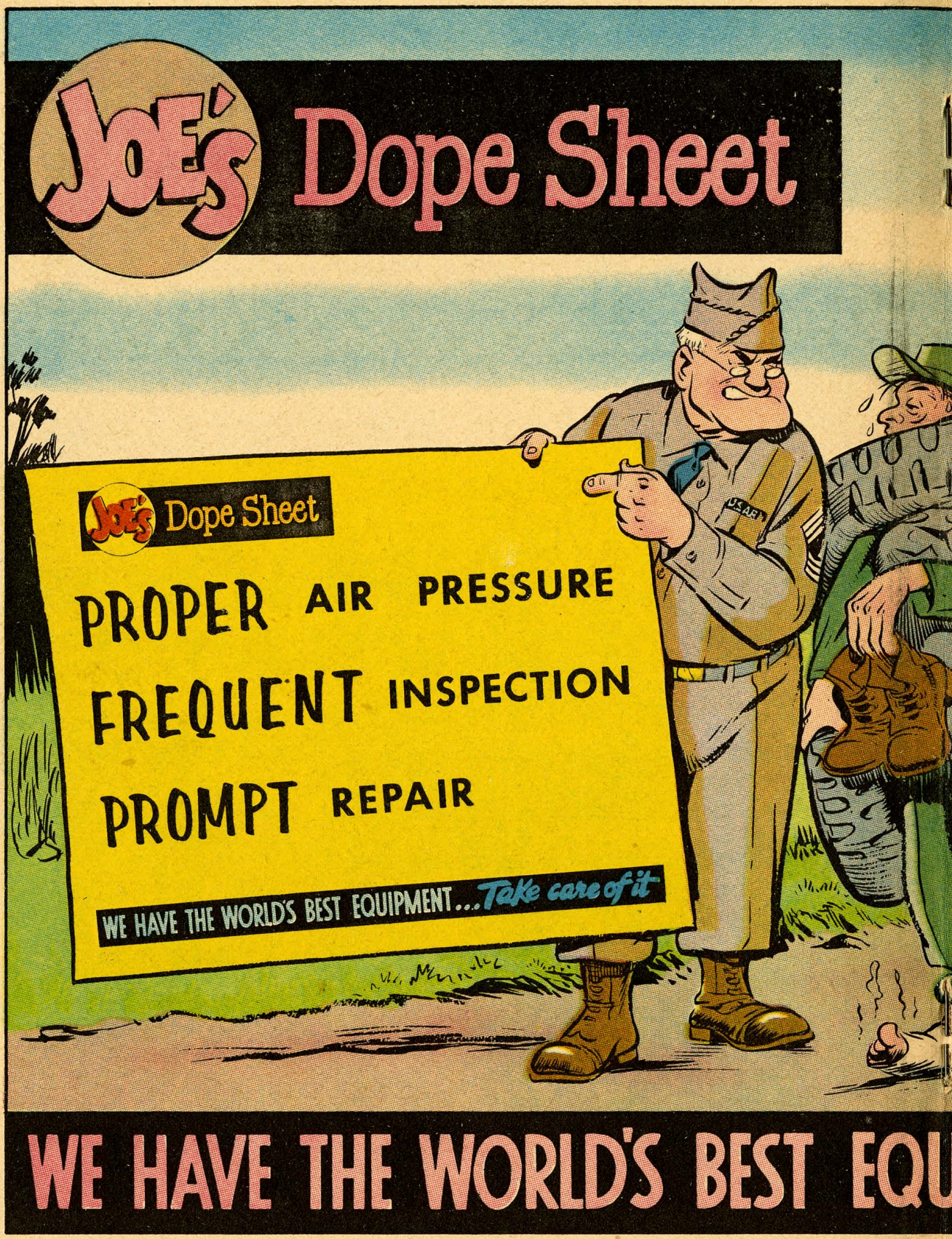
6 KEEP THOSE VALVE CAPS ON THE VALVE STEMS TIGHT. THIS WILL KEEP DIRT OUT. THEY'LL ALSO ACT AS SECONDARY AIR SEALS.

7 WHEN YOU GO TO FILL THE TUBE WITH AIR, MAKE SURE YOU CLEAN THE END OF THE VALVE FIRST...ELSE DIRT CAN GET IN THE STEM AND HOLD THE CORE OPEN, CAUSING A SLOW LEAK.

8 WHEN INSPECTING THE TUBE DON'T BLOW IT UP TO WHERE IT STARTS BALLOONING. IT'LL STRAIN THE RUBBER. IT CAN ONLY STAND A FEW POUNDS OF AIR PRESSURE WHEN OUT OF THE TIRE.






JOE'S Dope Sheet
JOE'S Dope Sheet
PROPER AIR PRESSURE
FREQUENT INSPECTION
PROMPT REPAIR
WE HAVE THE WORLD'S BEST EQUIPMENT... Take care of it
U.S.ARMY
WE HAVE THE WORLD'S BEST EQU

JOE'S Dope Sheet
If you want to keep rolling on air,
Pay attention to tire-and-tube care.
Keep your air pressure right—
Check 'em close, day and night—
All these tricks will cut down wear and tear.
JOE'S Dope Sheet
PROPER AIR PRESSURE
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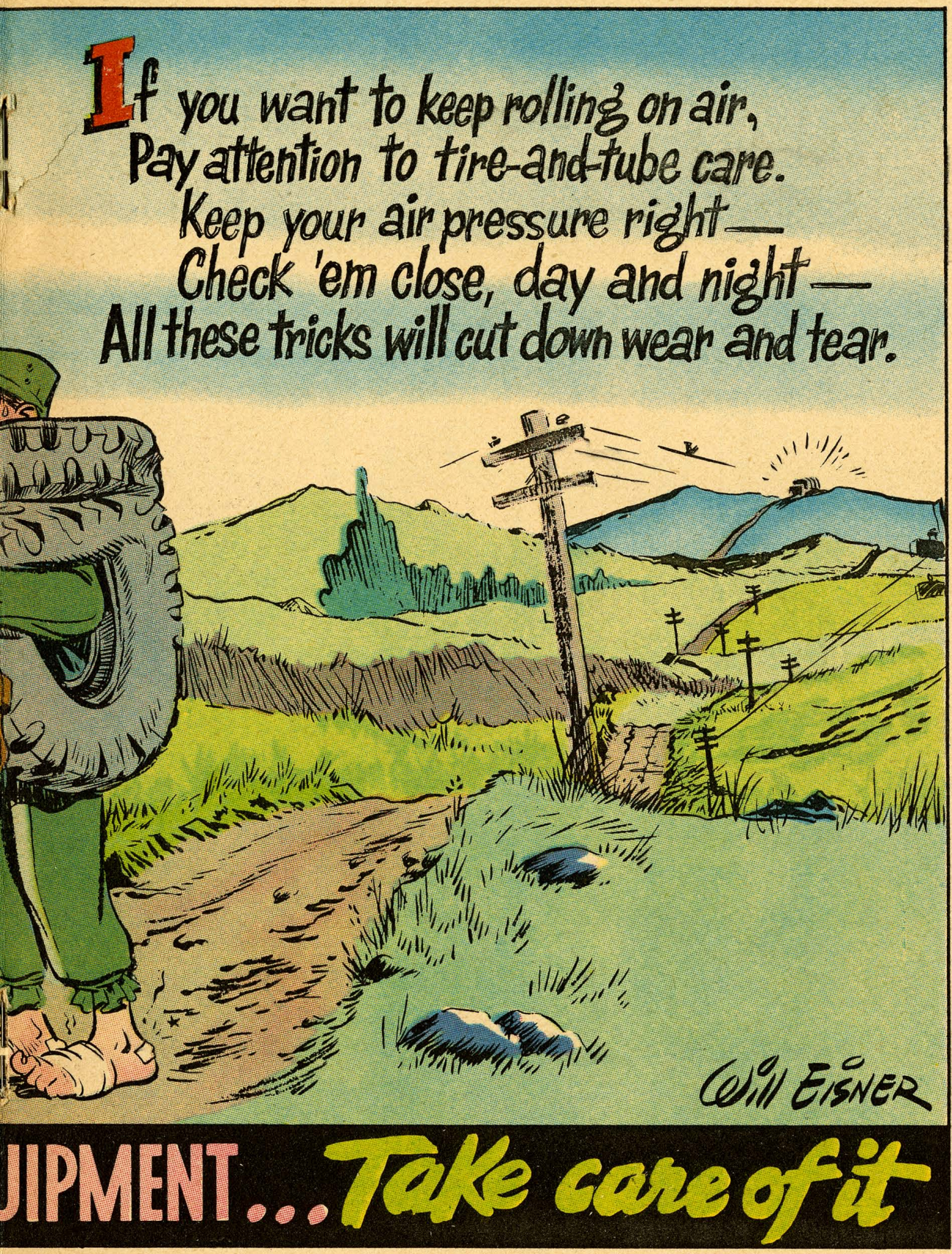
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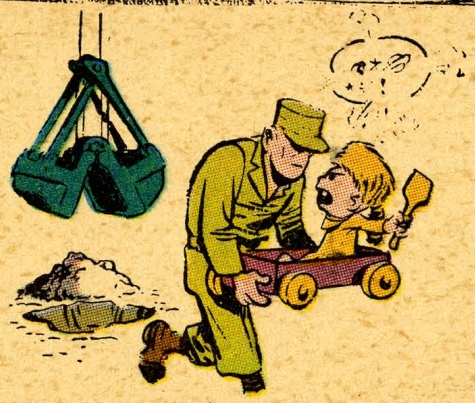
Will Eisner
UIPMENT... Take care of it

JOE'S DOPE

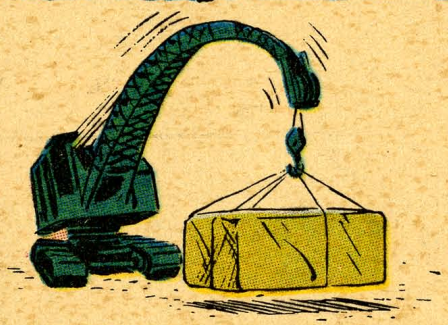
Crane Man's Pledge

NOW, ...THE CRANE RIGGERS' PLEDGE!



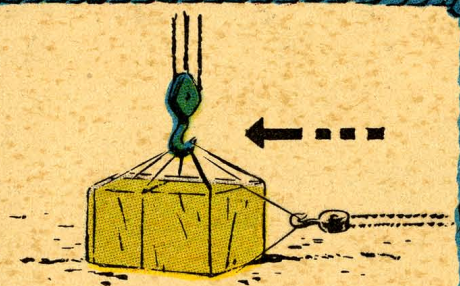
1 I'LL ALWAYS BE SURE THE AREA'S CLEAR (AND STAYS CLEAR) BEFORE DIRECTING A MOVE.

2 I'LL STAY ALERT WHEN DIRECTING THE USE OF SLINGS, BLOCKS, HOOKS AND HOISTING GEAR.



3 I'LL OBSERVE THE LOAD FOR THE SAFETY LIMITS OF MY EQUIPMENT.

4 BEFORE A LIFT I'LL TALK OVER THE TERRAIN WITH THE CRANE OPERATOR ... WE MAY NEED EXTRA HELP!



5 I'LL ALWAYS PLACE THE HOOK DIRECTLY OVER THE LOAD AND USE A SIDE PULL ONLY WITH THE USE OF SNATCH BLOCKS.

6 I'LL REPORT UNSAFE EQUIPMENT TO MY SUPERIORS AS SOON AS I DISCOVER IT.

7. I'LL USE STANDARD SIGNALS FOR ALL OPERATIONS ...AND...
8. I'LL STAY AHEAD OF THE LOAD TO MAKE SURE THE PATH STAYS CLEAR ...AND...
9. I'LL STAND BY TO DIRECT LOWERING AND UNHOOKING OPERATIONS!
10. I'LL NEVER LET THE BOOM COME TO WITHIN 10 FEET OF A POWERLINE ...AND...
11. I'LL SAFETY CHECK ALL SLINGS, CABLES, CHAINS AND HOOKS BEFORE STARTING OPERATIONS!!
STAND BY THAT PLEDGE AND YOU CAN'T GO WRONG!
A GOOD CRANE OPERATOR PLUS A GOOD RIGGER MAKE A TERRIFIC TEAM

WHY RUIN A GOOD THING?

Dear Half-Mast,

I'm just spittin' mad, so I thought I'd get this thing off my chest before I bust a gut.

It has to do with that temporary parking brake in the M133-series 2½-ton trucks. Most of us old drivers know how to use it the right way. But it's the trainees who are causing this gosh-awful situation.

These meatballs start playing with that brake and before any one has a chance to bust their knuckles—whammo, that truck's skiing all over the place.

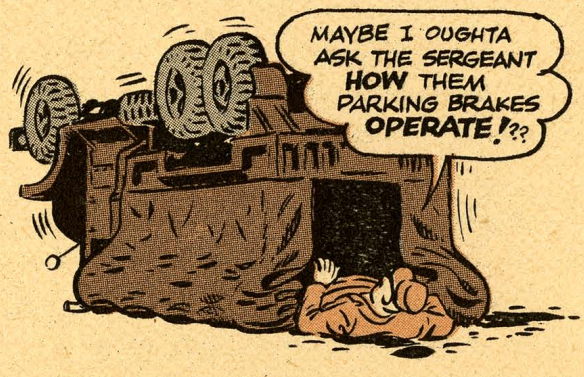
We've done something to keep some poor guy from getting clobbered, but we're wondering if it's legal. We've gotten the Old Man's permission to either disconnect the brake altogether or to take the switch knob off. Is there any directive on this, Sarge, which makes it an authorized fix for a training vehicle?

Sgt R. M. G.

Dear Sgt R. M. G.,

This problem's been a pain for some time. But what's there to say—if that parking brake wasn't needed, it wouldn't be on the truck. It's a good gismo, but only if it's handled right.

There's always a couple of lame-brained eight-balls who can't keep their mitts off things until they've been taught

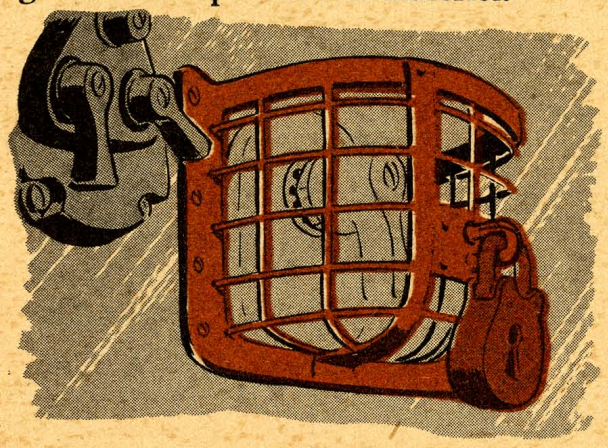


to use them. There've been tales of trucks overturning because this switch was flipped on at the wrong time.

No directive's out telling you to disconnect that switch or to take the knob

off. But AR 750-5 (23 January 1953) does say that "it is the responsibility of the commanding officer to prevent the abuse of materiel under his control. Evidence of abuse will be investigated and **corrective action** taken. Some common abuses are—

"(1) **Improper,** careless, or negligent use or operation of materiel."



This li'l passage could be interpreted different ways. Some people could say that the CO is on solid ground when he orders those switch knobs taken off or that service brake disconnected during training periods. After all, this is "corrective action." The thing wrong with this is that it may prevent an accident or two on the one hand, but may start a few on the other—that brake is really a friend to have around when you need it, especially in hilly, mountainous terrain where it's supposed to be used.

The quote from AR 750-5 could also mean that the CO will see to it that careful and complete instruction is given in the use of that parking brake before the trainee steps into the truck. This also is "corrective action."

No need to tell you that if a man knows what it's all about, he'll only use that brake when he has to. This is the

kind of guy that'll use the instruction he gets the right way.

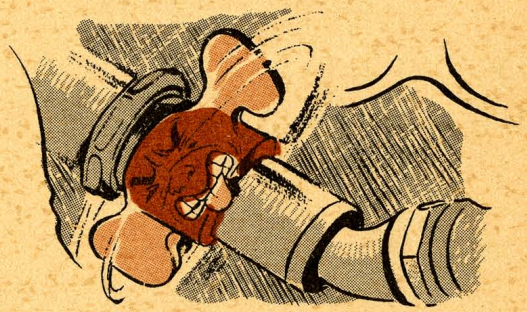
But how about some of these jokers who just don't believe the poop the instructor is putting out—the guys who have to find out things for themselves and usually end up going to the funeral of the poor, innocent slob they clobbered?

And, then, the CO could make it pretty tough on those guys who insist on ruining a good thing. This is real, down-to-earth "corrective action."

You might want to take a gander at paras 16 and 43 in TM 9-8024 (Oct '55) on using the temporary parking brake.

Half-Mast

TIGHT NUTS



Dear Half-Mast,

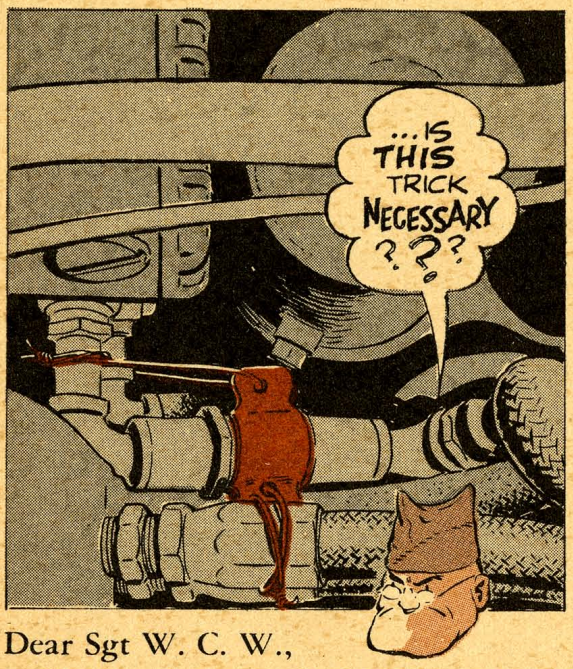
We've been having a heck of a time with those wing-nuts on the hydraulic line connection in the M-series 5-ton trucks. Those nuts are near the hy-

draulic pump, and they insist on coming loose after awhile. When this happens, those 5-tons are mighty hard to steer because the oil supply is shut-off.

We've solved this problem by drilling a hole through the nut, sticking a piece of wire through the hole and tying the ends of the wire to a nearby line.

Tell me, Sarge, is this a good way to keep our nuts tight?

M/Sgt W. C. W.



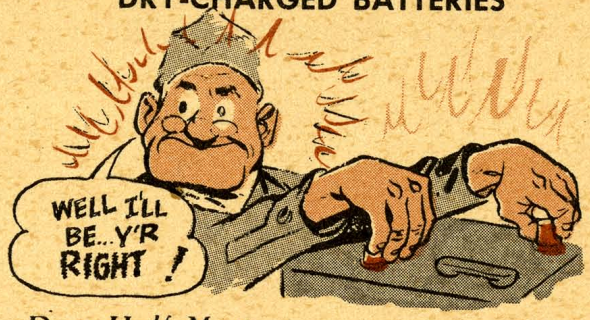
Dear Sgt W. C. W.,

You don't have to do this if you check those nuts every so often and make sure they're tight. Checking 'em every 1000 miles should do it.

Those nuts are to be tightened by finger only. You just take the nut between your finger and turn it until she won't go any further. Don't use tools on the buggers or else you may find you have a wing-nut without any wings.

Half-Mast

DRY-CHARGED BATTERIES



Dear Half-Mast,

On pages 18 and 19 of PS 33 you claim that dry-charged batteries need charging after you activate 'em and before you put 'em in service. I don't believe you. We have filled lots of dry charged batteries in my outfit, checked 'em and put 'em right into a vehicle. So far they all work OK. What gives?

Sgt M.H.

Dear Sgt M.H.

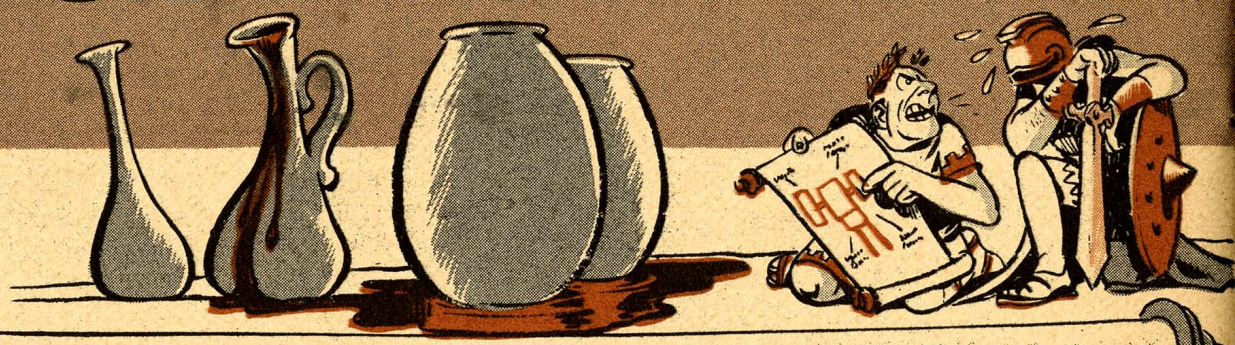
Must be old Half-Mast is getting too old. I just didn't keep up with the times on this one. The older dry-charged batteries generally did have to be given a booster charge before they were used, and putting 'em to work without it was a doubtful stunt, just like I said.

But I got lots of screams on this one, so I did some more checking. You're right, I'm caught with my electrolyte down. The new 6TN and 2HN batteries which are shipped dry-charged can be put in service without charging and will work all right—unless they show a specific gravity of less than 1.225 after filling or show excessive foaming. If either of these conditions appear, then you've gotta charge 'em. Otherwise put 'em right to work. Progress is wonderful.

Half-Mast

There's Only One, Only One... Lubricator—

OIL IN YOUR ENGINE



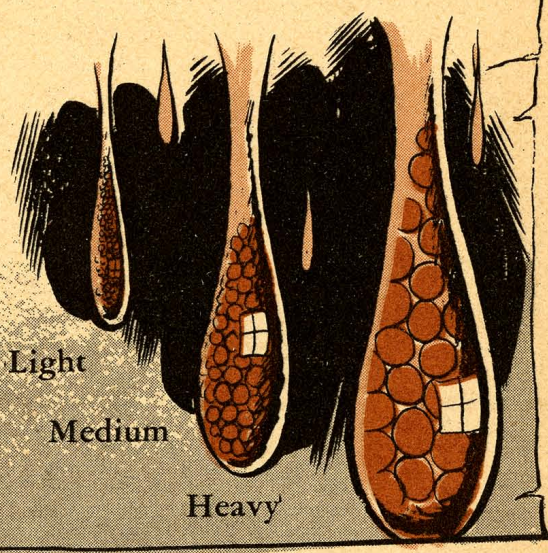
Comes a time when it's good to stop for a minute and wrap a broad subject up in a nice, tight digestible package, throw a red ribbon around it and file it in that "gray matter" upstairs for future use.

Such a subject is "Oil"—that black, crude stuff that gushes from Mother Earth's lap of luxury. It's a mighty important liquid—does all sorts of stuff and does it well.

But everything else it does takes a back seat to its most important job—that of helping to keep your vehicles rolling. Unless you know something about it—how it works, what its jobs are, what to look for when checking it, how to use it—it can be a villain indeed 'stead of a friend in need.

BALLS OF OIL

A glob of oil is made up of a lot of little balls called "molecules." Some of these balls are bigger than others, some fall in the medium class and others are doggone little balls. Oil that's made up of those heavy balls is called heavy oil; medium balls give us medium oil; and with those little balls you get light oil. The kind of oil you use depends on the kind of job you want done.



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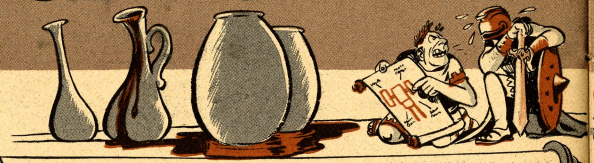

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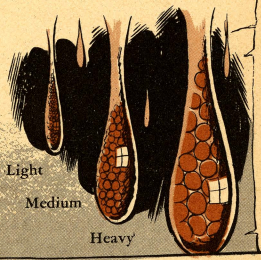
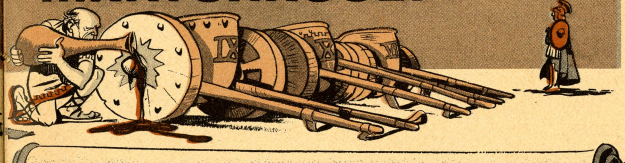
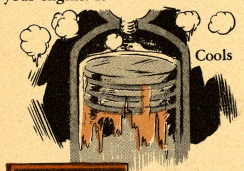
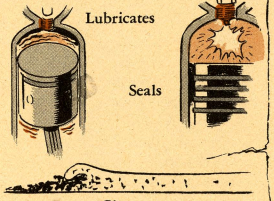


...NATCHROOLY



Motor oil's got four jobs to do in your engine. It—



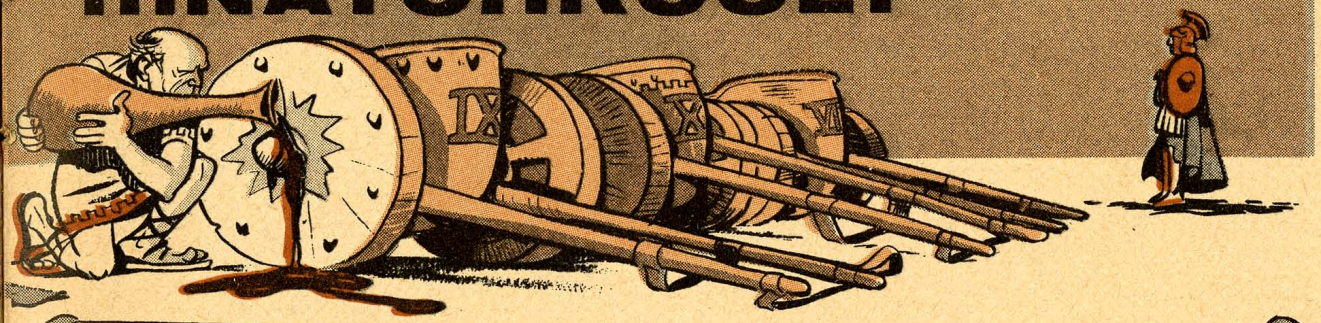


Here's how—

LUBRICATION

A piston in an average vehicle races up and down at about 2,000 feet a minute, rubbing its sides against that metal cylinder wall. Without the lube qualities of oil, which reduce wear and tear, that metal-to-metal contact and rubbing can cause all sorts of skinning.

...NATCHROOLY



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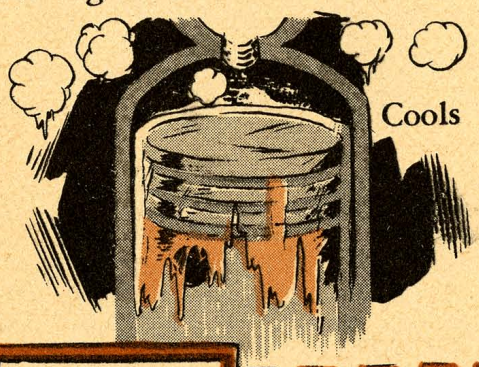
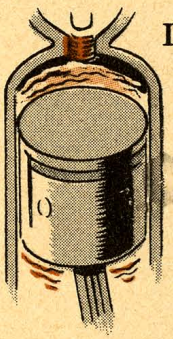


Cools



Lubricates

Seals

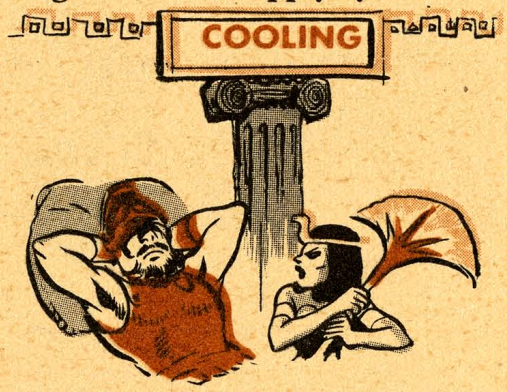
Cleans

Here's how—

LUBRICATION

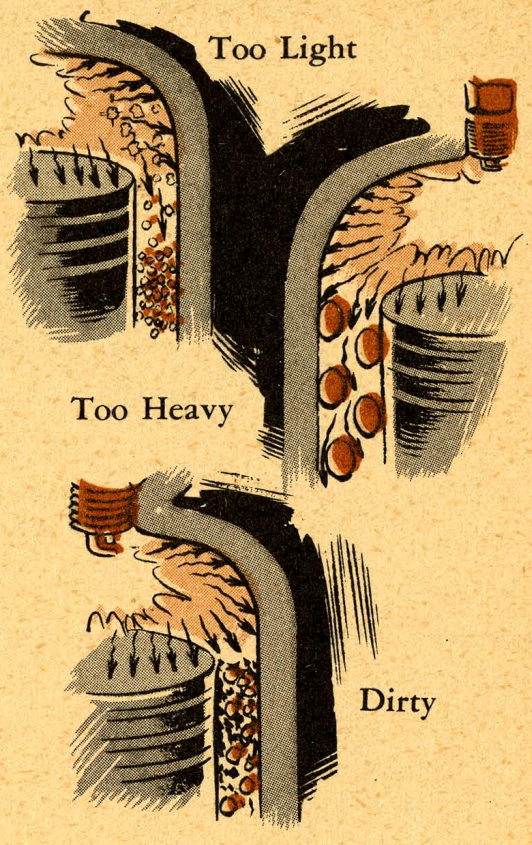
A piston in an average vehicle races up and down at about 2,000 feet a minute, rubbing its sides against that metal cylinder wall. Without the lube qualities of oil, which reduce wear and tear, that metal-to-metal contact and rubbing can cause all sorts of skinning.

But you've got to use the right kind of oil. If the balls of oil are too little, it won't be able to keep those metal parts apart. And the bigger the balls the tougher it is for it to squeeze into tight places. The right oil is made up of balls that're small enough to get in between the cracks, and yet big enough to lube the parts up real good so they won't start scratching one another. That's why you have OE (Engine Oil) 10, 30, 50 and OES (Sub Arctic)—all different kinds of weights—in the supply system.



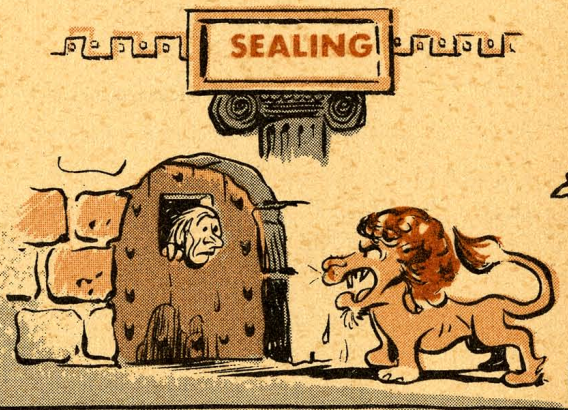
There are 1,500 explosions in the average engine every minute—giving off enough heat to melt steel. The coolant in your cooling system can't cool your engine all by itself—oil has to lend that helping hand.

Oil absorbs and carries off a good share of the heat. But if the oil's too light, the balls run over the surface OK but get eaten up to soon by the heat. When oil's too heavy, there just aren't enough of the balls to carry off the heat fast enough. Dirty oil won't absorb and carry away as much heat as clean oil will.

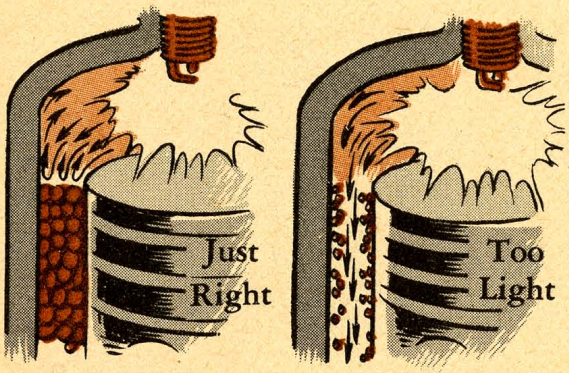


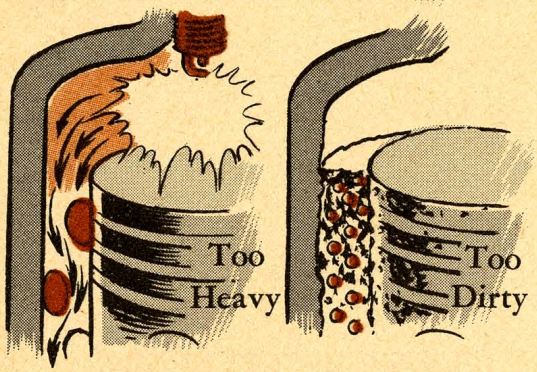
Keep a weather eye peeled to that temperature gage. If your oil and coolant are working as a team, that needle should stay at normal.

In air cooled engines (tanks) oil does a big job in cooling; so keep dirt, debris, and tarps away from oil coolers and air-inlet passages.



To keep that power the piston puts out from sneaking down the sides of the cylinder wall between the piston, the right oil locks it in. A metal surface is never perfect, but oil fills in the spaces and seals in power. If the oil is too light, it's not strong enough to hold the blow-by; if it's too heavy, it's not tight enough; if it's dirty, the dirt works like an abrasive and wears the walls away.

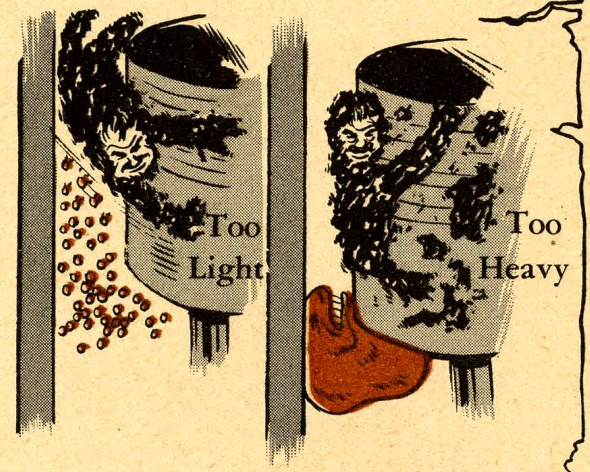


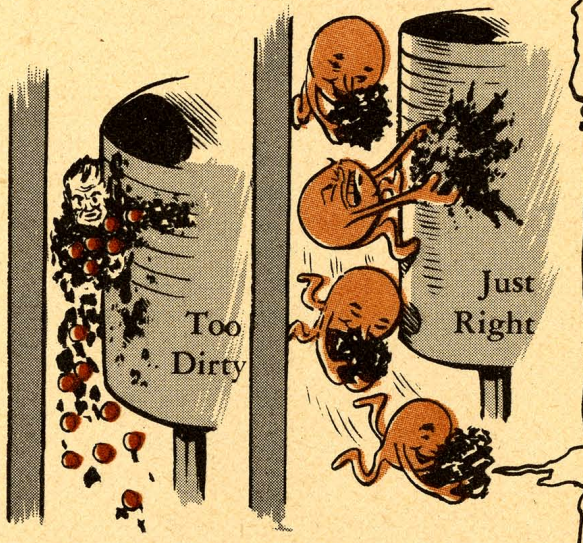


CLEANING

That sludge which gums up your engine's parts comes from the fuel, water and gummy stuff left after the oil gets "cooked" by engine heat. Too light oil won't give you enough insulation against this gum; if the oil is too heavy, it moves slow and can't get into those tight spots; dirty oil just adds more dirt. But the right oil moves fast, isolates pieces of dirt and carries 'em off to the filter—which should be cleaned or changed when the oil is changed.

There're three rules to follow that'll let the oil do its right kind of job and will keep your engine in top shape—

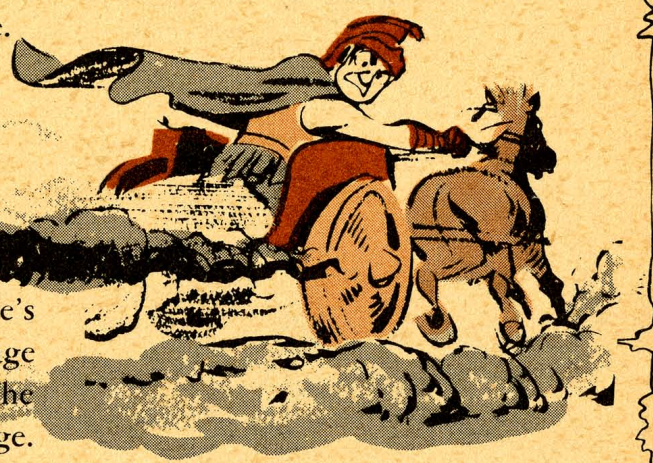




First, after a long halt, idle your engine to warm up.

Then, start your vehicle in the right gear, keep the loads right for the vehicle and take inclines in the proper gear; and

Third, check your oil and water daily and follow the LO as to what kind of oil is best for your vehicle.



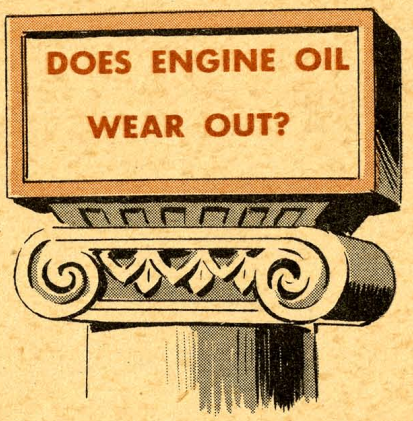
THE COLOR OF OIL

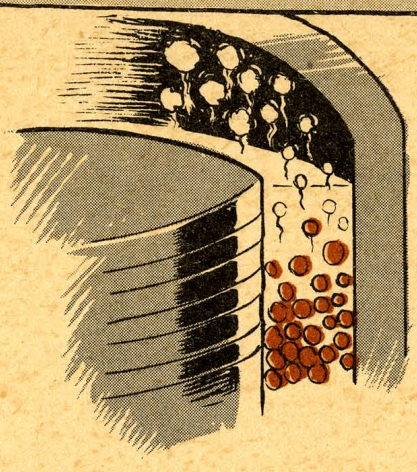
In spite of popular opinion, there's just no way of telling when to change your oil by checking its color. The **only** way to tell is by engine mileage. Your LO tells you how often to change the oil in your crankcase—usually once every 6,000 miles, unless you're driving under the kinds of conditions which require that you change the oil more often—like in sandy terrain.

One of your oil's main jobs is to clean. The oil you use is detergent type which does a washing job inside your engine. New and clear oil will look black before you know it. When it turns dark you know it's doing a good job of picking up and carrying out carbon and waste. That oil holds the carbon, dirt and other forms of gook in suspension. When you're draining out your crankcases and gear cases, make sure the oil's hot. That way all the grit that's held in suspension by the oil comes flowing out.

On the other hand, if the oil stays clean, it's probably leaving all that gook inside your engine instead of picking it up and carrying it to the filter.

A lot of oils turn grey shortly after you put them in the engine. The main causes of this are condensation; short runs, or driving the vehicle at slow speeds, which doesn't allow the engine temperature to get high enough to evaporate water vapors in the crankcase; clogged crankcase ventilating system; storing the vehicle in a damp place; or a leaky cylinder-head gasket. When you're running your vehicles in a cold area, you have to make sure your cooling-system thermostats are working right. If you're really squatting on an iceberg, use radiator and hood blankets so your engine will keep that proper operating temperature of above 140 degrees. This'll usually stop those conditions which cause your oil to turn grey.

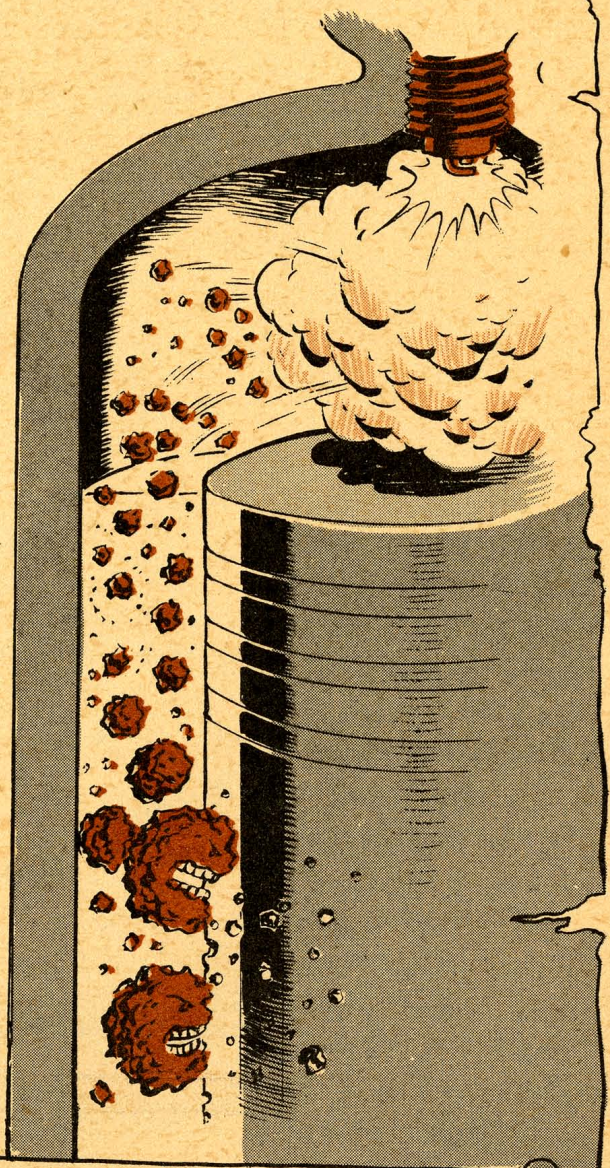




Yup—it sure does, but not the way you think. Speaking real technical-like, oil can't wear out; but all oils will break down when you use them in very hot or very cold weather. Heat, for example, causes oil to thin out—and if you keep it in heat for a long time, it evaporates some of the oil's parts.

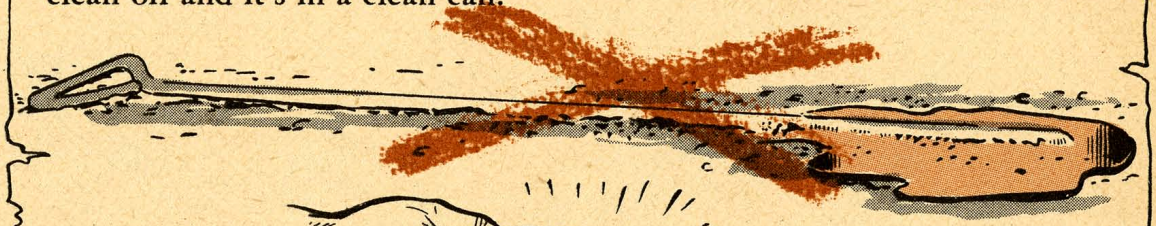
Once oil gets thick with sludge and other gook, it's no good as a motor lubricant. This sludge is not necessarily road dirt, engine soot and that kind of stuff—some of this gook can be filtered out mechanically by use of the oil filter.

It's other type of stuff—the stuff you can't filter out—that wears down motor oil. When your fuel starts burning, it throws off acid impurities which dissolve right in the oil. This stuff thickens the oil, and if you leave the oil in your engine long enough. it'll start eating away the metal parts in your engine—after all, it's acid.

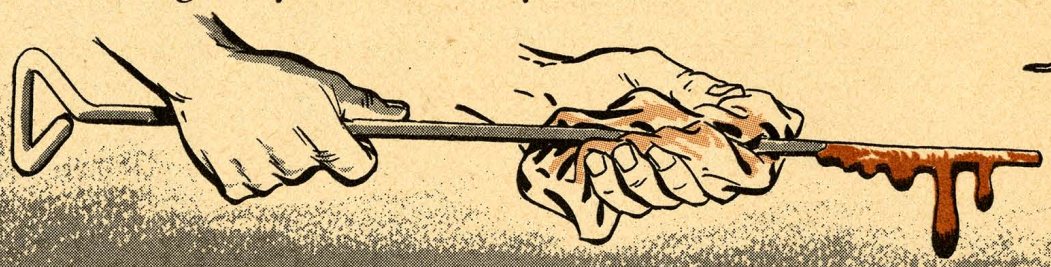


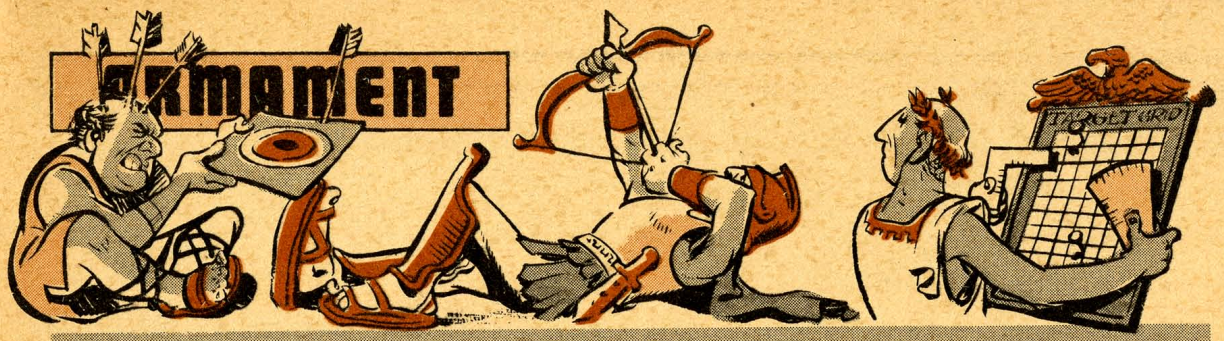
SOME HELPFUL HINTS

Oil gets dirty by itself, so why add any needless gook to it? A good way to keep goop out of oil is to wipe the cap and filler tube with a clean rag before pulling out the dipstick. And watch where you lay that dipstick. If you have to add oil, make sure it's clean oil and it's in a clean can.

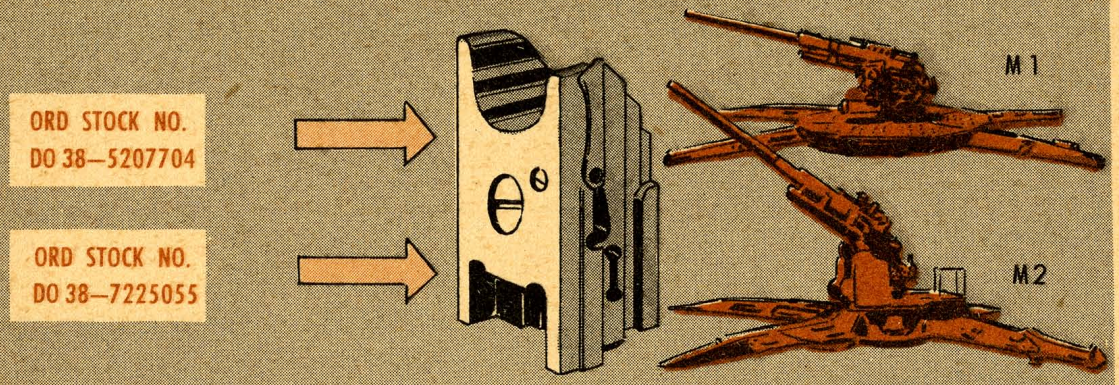


When you go to check your oil, use a clean rag on that dipstick. Keep that rag in your glove compartment—a clean rag always comes in handy.





THEY'LL SWITCH



Dear Half-Mast,

Breechblocks for the M2 90-mm gun and for the M1 90-mm gun look alike and seem to be interchangeable. However, we've noticed that the blocks have different stock numbers and the numbers etched on the blocks themselves are different for the two guns. Can you tell me if they're interchangeable?

Lt W. L. W.

Dear Lt W. L. W.,

Breechblocks (Ord Stock No. D038-7225055) for the 90-mm Gun M2 and (Ord Stock No. D038-5207704) for the 90-mm Gun M1 are interchangeable. So if you've got some left over from your M1's go ahead and use them on your M2's.

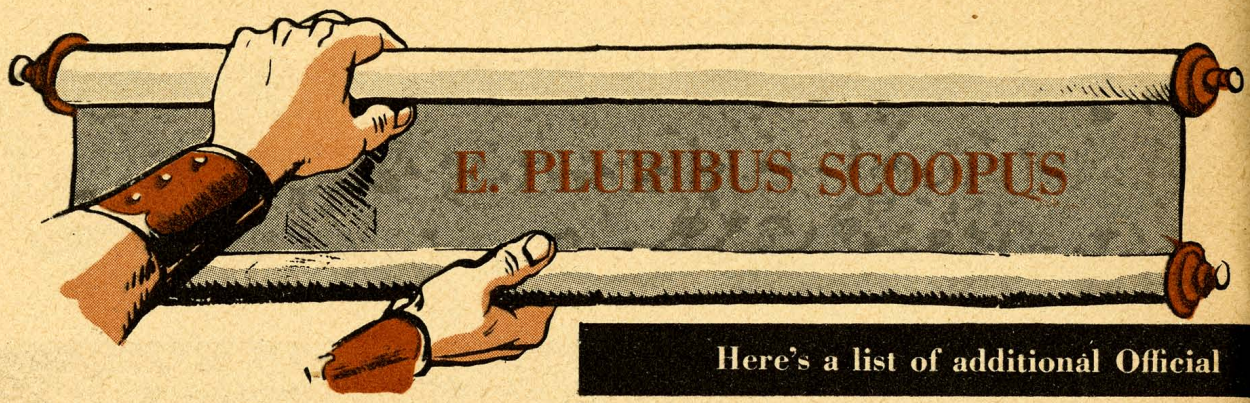
Half-Mast

KEEP YOUR DC-4 CLEAN

Dirty DC-4 compound (Insulating Compound, electrical) may be the reason your 5780 and 5795 magnetrons in the M33 systems are acting up. It prevents corona discharge and arcing when it's clean, but after a while it collects dust and dirt. Then it'll carry juice and cause the magnetron to act crazy.

Check your track and acquisition hot boxes for DC-4 that's dirty or caked. If it is, clean it off with carbon tetrachloride, wipe it dry, and put a **thin** film of DC-4 over the glass cathode insulator and metal filament connection.

Remember that using carbon tet is like raising rattlesnakes—dangerous unless you do it right. Be wary of fumes—do it out of doors—follow all safety-first measures.



Here's a list of additional Official

SUPPLY MANUALS

ORD 5-3-3 List pricing guide—parts and equip for wpns and sighting and FC, Nov 55

ORD 5-3-7, C1 List pricing guide—H-group mat, Nov 55

ORD 5-3-8, C1 List pricing guide—K-group mat, Nov 55

ORD 5-3-9 List pricing guide—L-group mat, Nov 55

ORD 9 SNL A-50, C1 Auto, gun 40-mm, M1, M1A1; Gun, dual, auto, 40-mm M2; Carriage, gun, 40-mm, M2A1, M2A3; Mt, gun 40-mm M3 and mt, gun, twin, 40-mm, M4, Sep 55

ORD 7 SNL B-49 Auto, pistol cal. .22, high stdrd supermatic, Nov 55

ORD 8 SNL D-54 Mt, comb gun, M78, Oct 55

ORD 8 SNL F-295 Mt, M64, M72, Nov 55

ORD 8 SNL F-321, C2 Sight, M19A1, Nov 55

ORD 9 SNL F-342 Vol 4A, C-1 FC system, AAA, T33C, T33D—Vol 4—List of all service parts of console, tracking (7622028), Nov 55

ORD 8 SNL F-353 Mt, M85, Oct 55

ORD 8 SNL F-373 Panoramic, telescope T149E1, Oct 55

ORD 8 SNL F-386, C1 Computer, T31, Dec 55

ORD 7 SNL G-253, C1 Self-prop, gun, full track: twin 40-mm, M42, Oct 55

ORD 9 SNL G-281 Tank recovery veh: med, M74, Sep 55

ORD 7 SNL G-502, C1 ¾ ton truck, T214; Nov 55

ORD 6 SNL J-7 Sec 13, C1 Tool set, org maint, rocket bry (762-mm), Nov 55

ORD 6 SNL J-8 Sec 1, C1 Tool set, fld, expl ord dis squad, Dec 55

ORD 6 SNL J-8 Sec 22, C2 Shop set, fld, sp parts storage, Set 1, Nov 55

ORD 6 SNL J-8 Sec 23, C2 Shop set, fld, sp parts storage, Set 2, Nov 55

ORD 6 SNL J-8 Sec 26, C1 Tool set, fld, chem munitions safety control, No. 1 common, Nov 55

ORD 6 SNL J-8 Sec 30, C2 Tool set, fld, ord park co. (Army/Comz), Dec 55

ORD 6 SNL J-8 Sec 35, C1 Shop set, fld NIKE, Nov 55

ORD 6 SNL J-9 Sec 4, C1 Tool set, rebabbitting, auto bearings, inserts, Nov 55

ORD 6 SNL J-10 Sec 4, C1 Tool set, gen'l mechanic's, Nov 55

ORD 6 SNL J-10 Sec 6, C1 Tool set, welder's, Nov 55

ORD 6 SNL J-10 Sec 8, C2 Tool set, auto fuel, elec sys repair, Dec 55

ORD 6 SNL J-10 Sec 15, C1 Tool set, canvas and leather repair, Dec 55

ORD 6 SNL J-10 Sec 17, C2 Tool set, gen'l mechanic, army aircrft, Nov 55

ORD 6 SNL J-10 Sec 18, C1 Tool set, elec, army aircraft, Nov 55

ORD 6 SNL J-10 Sec 19, C2 Tool set, paint, dope, fab wkr, army aircrft, Nov 55

ORD 6 SNL J-10 Sec 21, C2 Tool set, FC mech, Nov 55

ORD 6 SNL J-15 Sec 3 Spcl tool sets FCS T38 (fld set) used w/AAA, Nov 55

ORD 6 SNL J-16 Sec 67 Tool sets, fld, depot maint for controlled differential used in M59, Nov 55

SM 9-5-1325 Stock list, Ammo, FCS 1325, Sep 55

SM 9-5-1375 Stock list, Ammo, FSC 1375, Nov 55

TECHNICAL MANUALS

TM 9-1580, C1 Binoculars M3, M7, M8, M9, M13, M13A1, M15, M15A1, M16, M17, and M17A1 and BC telescope M65, Nov 55

TM 9-1730A, C1 Continental 6-cyl engine Mod AOS-895-3, Nov 55

TM 9-6069 Boresight M41 (T150), Nov 55

TM 9-6071 Sight M40 (T149E2), Nov 55

TM 9-6083 Remote control system M12A1, Nov 55

TM 9-6166 Aiming Circle M2, Oct 55

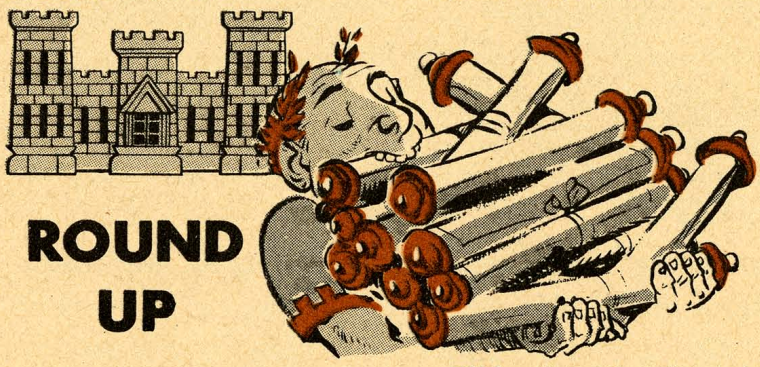
TM 9-7009-1, C1 12-cyl air-cool engine Continental, models AV-1790-5A, AV-1790-5B, AV-1790-7, Dec 55

TM 9-8002 10-ton M123 6x6 Truck Tractor, Nov 55

TM 9-8023-3 TO 36A12-1B-332 Body auxiliary equip 2½-ton, M34, M35, M47, M59, M109, Oct 55

TM 9-9036-7 Buffing machine single-ph 60-cy 110-v ¼-horsepower Baldor Electric Type 11-16C-4 (40-G-138), Nov 55

TM 9-9096-1 (TO 34C2-9-3-21) Metal Cutting Shaper (Delta Modl 27-100) (40-S-1570) Nov 55



ROUND UP

HERE ARE SOME MORE PUBS

ENG 7&8's

9007 Trlr, 2-whl, 3-ton, clamshell bucket, M16, 23 Aug 55

9507 Crane-Shvl, PU, rev, trk-mtd, 20-ton, ¾ cu yd, Bay City Mod 180-T66, 12 Jul 55

5138, C1 Gen set, gas-drvn, skid-mtd, Hobart, Minn-Moline, Mission Appliances Corp and O'Keefe and Merritt Models M5 and Hobart Mod M6, 15 Sep 55

1580 Bulldozer, cable-optd for Caterpillar D7; LeTourneau mod XD7, 3 Oct 55

1312, C1 Crane-Shvl, PU, rev, crawler, Lima mod 34, 14 Nov 55

1584 Angledozer, cable-optd, La Plant-Choate mod R-82, 25 Aug 55

2074 Pump, horiz duplex piston, stm-drvn, ¾-in disch & 2-in suction, 30 Sep 55

4037 Drill, pneu, port, rock, dry-type, 55-lb class. 25 Aug 55

4069 Drill, pneu, port, rotary-type, Chicago Pneu mod 3450-300, 25 Aug 55

5089 Gen set, port, gas-drvn, US Mtrs mod Sig Corps des PE-78A-B-C, 24 Aug 55

9229 Trailer, full, La Crosse mod DF-4-12, 24 Aug 55

ENG 7, 8 & 9's

1129, C1 Dist, wtr, trk-mtd, 1,000-gal, Vic Mod 73, 12 Sep 55

5388, C1 Comp, air, skid-mtd, gas-drvn, Rix Mod 1262, 16 Sep 55

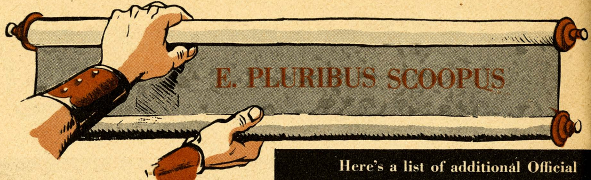
1127, C1 Dist, wtr, trk-mtd, 1,000-gal cap, gas-drvn, Butler Mod 6743, 22 Sep 55

5312, C2 Gen Set, elec, port, gas-drvn, skid-mtd, Hercules Elec Mach & Equip Co Mod HC 30W-400, 3 Oct 55

1400-5 Crusher, screener and washer, Pioneer mods 300-WAE, 300-Wide, P300W and 2220-SDE, 19 Aug 55

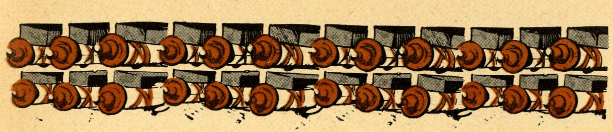
1400-9 Pump, centrifugal, 25 Aug 55

3040 Tractor, full-tracked, dsl-engine-drvn, Caterpillar mod D8, 16 Sep 55



E. PLURIBUS SCOOPUS

Here's a list of additional Official Publications on Ordnance Equipment which are of interest to a lot of you.



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ORD 5-3-9 List pricing guide—L-group mat, Nov 55

ORD 9 SNL A-50, C1 Auto, gun 40-mm, M1, M1A1; Gun, dual, auto, 40-mm M2; Carriage, gun, 40-mm, M2A1, M2A3; Mt, gun 40-mm M3 and mt, gun, twin, 40-mm, M4, Sep 55

ORD 7 SNL B-49 Auto, pistol cal. .22, high stdrd supermatic, Nov 55

ORD 8 SNL D-54 Mt, comb gun, M78, Oct 55

ORD 8 SNL F-295 Mt, M64, M72, Nov 55

ORD 8 SNL F-321, C2 Sight, M19A1, Nov 55

ORD 9 SNL F-342 Vol 4A, C-1 FC system, AAA, T33C, T33D—Vol 4—List of all service parts of console, tracking (7622028), Nov 55

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ORD 8 SNL F-386, C1 Computer, T31, Dec 55

ORD 7 SNL G-253, C1 Self-prop, gun, full track: twin 40-mm, M42, Oct 55

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TM 9-6071 Sight M40 (T149E2), Nov 55

TM 9-6083 Remote control system M12A1, Nov 55

TM 9-6166 Aiming Circle M2, Oct 55

TM 9-7009-1, C1 12-cyl air-cool engine Continental, models AV-1790-5A, AV-1790-5B, AV-1790-7, Dec 55

TM 9-8002 10-ton M123 6x6 Truck Tractor, Nov 55

TM 9-8023-3 TO 36A12-1B-332 Body auxiliary equip 2½-ton, M34, M35, M47, M59, M109, Oct 55

TM 9-9036-7 Buffing machine single-ph 60-cy 110-v ¼-horsepower Baldor Electric Type 11-16C-4 (40-G-138), Nov 55

TM 9-9096-1 (TO 34C2-9-3-21) Metal Cutting Shaper (Delta Modl 27-100) (40-S-1570) Nov 55

TM 9-9098-1 Arcwelding machine, 300-amp, gas 3-KW, 115-v aux (Hobart Bros Model GR-300-S) (3375-255-9991) Oct 55

TM 9-9624-5 Clutch adj fixture—7650184 (for FCS T38) Oct 55

ORDNANCE MWO'S

A50-W38 40-mm AAA gun carriages M2A1, M2A3, M27 and radar equip trlr V-62/MPQ-10: Prov batteries to insure opn breakaway system, all temps **F**, Nov 55

D65-W4 Trk-mtd 762-mm rocket Launcher XM289: holders stow leveling jack handles **F**, Nov 55

F238-W2, C1 Binoculars M17 and M17A1: remove, install left prism shelf assy and reticle assy as unit **D** Dec 55

F342-W5 AAA FC systems M33C, M33D, T33C, and T33D: replace resistors in slewing relay circuits **F**, Dec 55

G1-W46, C2 Armored inf veh T59; 2½-ton M135, M211, M215, M217, M220, M221 and M222: Install new transmission control-valve outer body **D**, Nov 55

G1-W62 2½-ton trks M34, M35, M36, M47, M49, M50, M59, M108, M109, M135, M211, M215, M217, M220, M222, V-17A/MTQ, V-18A/M1Q; trk chassis M44, M45, M46; trk trctrs M48, M221, and M275; install improved gasket on winch automatic brake case cover, **F**, Dec 55

G254-W14 90-mm gun, M48 tank: Install new turret blower **O**, Dec 55

G254-W15 90-mm gun M48 Tank: Replace compensating idler arm assemblies **O**, Dec 55

G268-W10 4x4 hvy front gun-lift M249, 4x4 hvy rear gun-lift M250: Replace hydc hoist cyl 1-stage lift shackles w/2-stage shackles **O**, Nov 55

G744-W20 5-ton 6x6 trks, M41, M54, M55; M64; Tr M40, M61, M63, M139, and M139C (M139E1); M51; M62; M52; M246; install lube fitting on front winch drive shaft U-Joint yoke **F**, Dec 55

G744-W27 5-ton 6x6 M62 trk: Install restrictor in power divider governor valve control, valve-to-power divider governor valve vacuum line **F**, Dec 55

G754-W8 1½-ton trlr M104: Prevent distortion, spreading of cargo rack stakes **F**, Dec 55

G768-W3, C1 2½-ton 4x2 dump trk (GMC models HC-451, HC-452): Bolting dump body sub-frame and chassis frame together **F**, Dec 55

SUPPLY BULLETINS

SB 9-86 Comm'l type vehicles: Procurement, installation signal lights **D**, Nov 55

TECHNICAL BULLETINS

TB 9-OSSC-G Storage and shipment chart, group G All Nov 55

TB 9-7009-6/3 Cross-drive transmission Models CD-850-4, -4A: Adaptation of -4A housing to -4 transmission **D**, Dec 55

TB 9-7205-2/3 Elev and trav system components for self-prop 155-mm gun T97 and 8-in how T108 **D**, Oct 55

TB 9-8006-2 Front 4x4 hvy gun-lift M249 and rear 4x4 hvy gun-lifting trk M250: Inspect flex hyd hose **O**, Nov 55

TB 9-8028-1 (TO 36A12-1C-311) 5-ton 6x6 trk M62 and trk trctr-wrckr M246: Marking crane boom **O**, Dec 55

TB ORD 597-32 (TO 34C2-5-8-22) Milling Mach (Van Norman Co, models 12 and 12 mod) (40-M-39): Rebld stndrds **D**, Nov 55

TB ORD 597-33 Lathe attachment (Master Mfg Co, model C) (3430-449-6655): Rebuild stndrds **D**, Nov 55

TB ORD 618 Shell, HE, M48 w/pd fuze for 75-mm how and shell, WP, M64 w/pd fuze for 75-mm how: Caln data for certain lots Oct 55

TB Ord 622 Continental model AOS-895, AV-1790 series engines: Proper connecting rods, pistons **F**, and **D**, Dec 55

LUBRICATION ORDERS

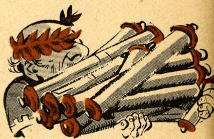
LO 9-U700 Buffing machine, tire (Retreading Equip Co. US 15-A) Sep 55

LO 9-3026-1 75-mm, T83E6 or T83E7 on gun, 75-mm T69 gun, AA, Recoil mechanism, T47E2 or T47E3, loader rammer, T23 Nov 55

LO 9-8022 2½-ton truck, 6x6 M34, M35, M44, M46, M47, M48, M49, M50, M59, M108, M109, M275, V17A/MTQ, V18A/MTQ Nov 55

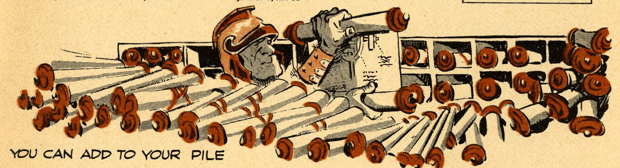
LO 9-9092-2 Sawing Machine, ½ hp, 110-v, 60 c, (Armstrong-Blum Mfg. Co. Model Mar No. 2) Sep 55

> **NOTE—On TB's, SB's and MWO's:**
> **O—Organizational Maintenance**
> **F—Field Maintenance**
> **D—Depot Maintenance**



ROUND UP

HERE ARE SOME MORE PUBS



YOU CAN ADD TO YOUR PILE

ENG 7&8's

9007 Trlr, 2-whl, 3-ton, clamshell bucket, M16, 23 Aug 55

9507 Crane-Shvl, PU, rev, trk-mtd, 20-ton, ¾ cu yd, Bay City Mod 180-T66, 12 Jul 55

5138, C1 Gen set, gas-drvn, skid-mtd, Hobart, Minn-Moline, Mission Appliances Corp and O'Keefe and Merritt Models M5 and Hobart Mod M6, 15 Sep 55

1580 Bulldozer, cable-optd for Caterpillar D7; LeTourneau mod XD7, 3 Oct 55

1312, C1 Crane-Shvl, PU, rev, crawler, Lima mod 34, 14 Nov 55

1584 Angledozer, cable-optd, La Plant-Choate mod R-82, 25 Aug 55

2074 Pump, horiz duplex piston, stm-drvn, ¾-in disch & 2-in suction, 30 Sep 55

4037 Drill, pneu, port, rock, dry-type, 55-lb class. 25 Aug 55

4069 Drill, pneu, port, rotary-type, Chicago Pneu mod 3450-300, 25 Aug 55

5089 Gen set, port, gas-drvn, US Mtrs mod Sig Corps des PE-78A-B-C, 24 Aug 55

9229 Trailer, full, La Crosse mod DF-4-12, 24 Aug 55

ENG 7, 8 & 9'S

1129, C1 Dist, wtr, trk-mtd, 1,000-gal, Vic Mod 73, 12 Sep 55

5398, C1 Comp, air, skid-mtd, gas-drvn, Rix Mod 1262, 16 Sep 55

1127, C1 Dist, wtr, trk-mtd, 1,000-gal cap, gas-drvn, Butler Mod 6743, 22 Sep 55

5312, C2 Gen Set, elec, port, gas-drvn, skid-mtd, Hercules Elec Mach & Equip Co Mod HC 30W-400, 3 Oct 55

1400-5 Crusher, screener and washer, Pioneer mods 300-WAE, 300-Wide, P300W and 2220-SDE, 19 Aug 55

1400-9 Pump, centrifugal, 25 Aug 55

3040 Tractor, full-tracked, dsl-engine-drvn, Caterpillar mod D8, 16 Sep 55

9372-2 PCU, LeTourneau mod T-7, 28 Sep 55

1228 Angledozer, hyd-optd, Caterpillar mod 4A, 30 Sep 55

1400-2 Crusher, jaw-type, dsl-drvn, 6-wh, Pioneer mod 153-PRD, 19 Aug 55

4099 Drill, pneu, port, rock, Davy Compression Co mod DS-58, 20 Sep 55

LUBRICATION ORDERS

5-2002 Well drlg mach, percussion type, trlr-mtd, Star mod 71-P, 7 Oct 55

5-3554 Trlr, fire, pumper, 2-wh, 500-GPM Hale mod, 14 Oct 55

5-2063 Dist unit, gas-drvn, skid-mtd, 60-GPH, Badger mod SU, 19 Oct 55

5-5132 Welder, elec arc, gas-drvn, Harnischfeger mod WF-300, 19 Oct. 55

5-5134 Gen set, port, gas-drvn, 60-cy, Detroit Wax Paper mod M7, 14 Oct 55

5-5315 Gen set, elec, port dsl-drvn, skid-mtd, Buda mod DA60-A3-CE, 7 Oct 55

5-9233 Sawmill, port, dsl-drvn, American Saw Mill Mach Co mod 7½, 7 Oct 55

5-3309 Tractor, whl type, dsl drvn, Woolridge mod T4, 14 Oct 55

5-5148 Gen set, elec, port, gas-drvn, skid-mtd, Carson mod PE-79-F, 21 Oct 55

5-5441 Engine, gasoline, Waukesha mod XAH, 19 Oct 55

5-3011 Tractor, whl type, pneu tires, gas-drvn, Ford mod 9N, 21 Oct 55

5-5067 Gen set, port, dsl-drvn, skid-mtd, O'Keefe & Merritt mod, 26 Oct 55

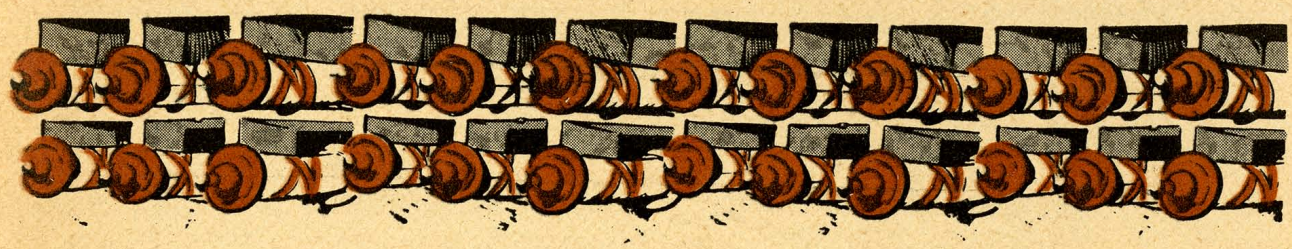
5-9804-1 Crane-Shvl, PU, rev, gas-drvn, crawler-mtd, Link Belt mod LS-90, 25 Oct 55

5-9804-2 Crane-Shvl, PU, rev, gas-drvn, crawler-mtd, Link Belt mod LS-90, 26 Oct 55

ENG MODIFICATION WORK ORDERS

5166-3, C1 Engine, gasoline, Continental mod M330, 26 Oct 55

3300-3 Tractor, whl type, LeTourneau mod Super C Tournadozer and Tournatractor, 17 Oct 55



Publications on Ordnance Equipment which are of interest to a lot of you.

TM 9-9098-1 Arcwelding machine, 300-amp, gas 3-KW, 115-v aux (Hobart Bros Model GR-300-S) (3375-255-9991) Oct 55

TM 9-9624-5 Clutch adj fixture—7650184 (for FCS T38) Oct 55

ORDNANCE MWO'S

A50-W38 40-mm AAA gun carriages M2A1, M2A3, M27 and radar equip trlr V-62/MPQ-10: Prov batteries to insure opn breakaway system, all temps **F**, Nov 55

D65-W4 Trk-mtd 762-mm rocket Launcher XM289: holders stow leveling jack handles **F**, Nov 55

F238-W2, C1 Binoculars M17 and M17A1: remove, install left prism shelf assy and reticle assy as unit **D** Dec 55

F342-W5 AAA FC systems M33C, M33D, T33C, and T33D: replace resistors in slewing relay circuits **F**, Dec 55

G1-W46, C2 Armored inf veh T59; 2½-ton M135, M211, M215, M217, M220, M221 and M222: Install new transmission control-valve outer body **D**, Nov 55

G1-W62 2½-ton trks M34, M35, M36, M47, M49, M50, M59, M108, M109, M135, M211, M215, M217, M220, M222, V-17A/MTQ, V-18A/MTQ; trk chassis M44, M45, M46; trk trctrs M48, M221, and M275; install improved gasket on winch automatic brake case cover, **F**, Dec 55

G254-W14 90-mm gun, M48 tank: Install new turret blower **O**, Dec 55

G254-W15 90-mm gun M48 Tank: Replace compensating idler arm assemblies **O**, Dec 55

G268-W10 4x4 hvy front gun-lift M249, 4x4 hvy rear gun-lift M250: Replace hydc hoist cyl 1-stage lift shackles w/2-stage shackles **O**, Nov 55

G744-W20 5-ton 6x6 trks, M41, M54, M55; M64; Tr M40, M61, M63, M139, and M139C (M139E1); M51; M62; M52; M246; install lube fitting on front winch drive shaft U-Joint yoke **F**, Dec 55

G744-W27 5-ton 6x6 M62 trk: Install restrictor in power divider governor valve control, valve-to-power divider governor valve vacuum line **F**, Dec 55

G754-W8 1½-ton trlr M104: Prevent distortion, spreading of cargo rack stakes **F**, Dec 55

G768-W3, C1 2½-ton 4x2 dump trk (GMC models HC-451, HC-452): Bolting dump body sub-frame and chassis frame togetner **F**, Dec 55

SUPPLY BULLETINS

SB 9-86 Comm'l type vehicles: Procurement, installation signal lights **D**, Nov 55

TECHNICAL BULLETINS

TB 9-OSSC-G Storage and shipment chart, group G All Nov 55

TB 9-7009-6/3 Cross-drive transmission Models CD-850-4, -4A: Adaptation of -4A housing to -4 transmission **D**, Dec 55

TB 9-7205-2/3 Elev and trav system components for self-prop 155-mm gun T97 and 8-in how T108 **D**, Oct 55

TB 9-8006-2 Front 4x4 hvy gun-lift M249 and rear 4x4 hvy gun-lifting trk M250: Inspect flex hyd hose **O**, Nov 55

TB 9-8028-1 (TO 36A12-1C-311) 5-ton 6x6 trk M62 and trk trctr-wrckr M246: Marking crane boom **O**, Dec 55

TB ORD 597-32 (TO 34C2-5-8-22) Milling Mach (Van Norman Co, models 12 and 12 mod) (40-M-39): Rebld stndrds **D**, Nov 55

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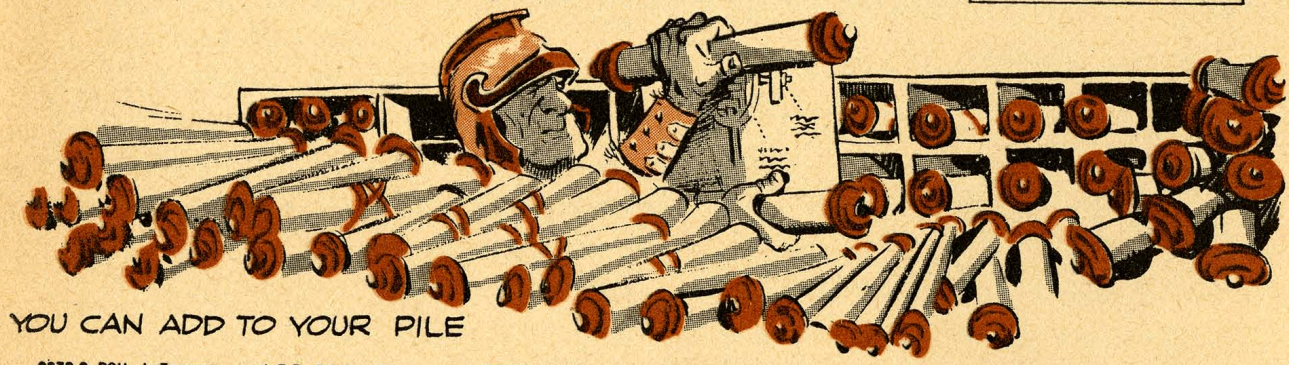

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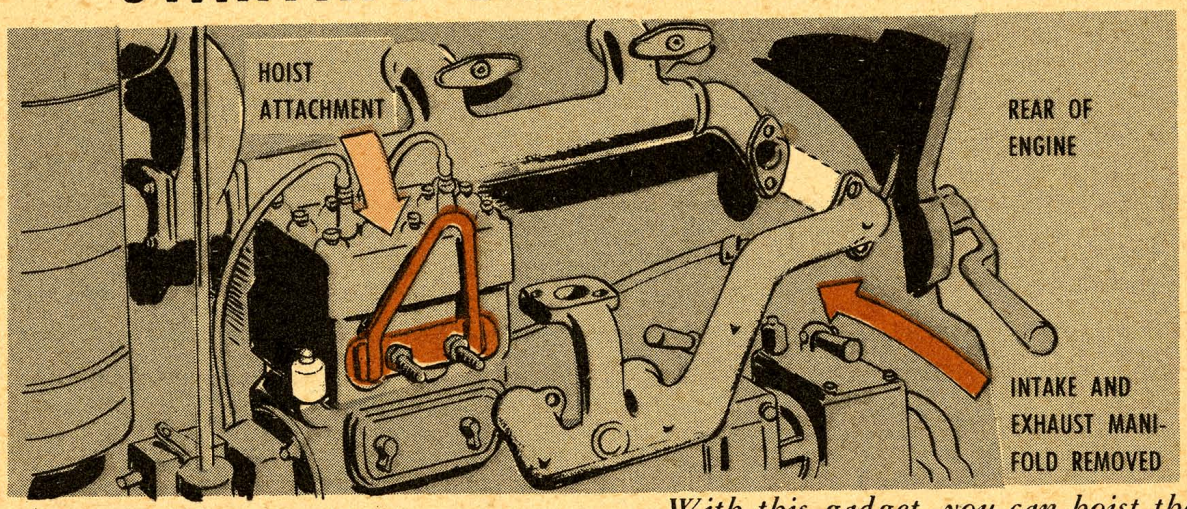
Get Your...

STARTING-ENGINE IN A SLING



Dear Sgt Dozer,

We finally got tired of wrestling the vertical starting-engines out of Caterpillar track-type tractors. It sure is an unhandy chore. And lining those starting engines up and getting 'em back in is even worse. By applying brain instead of brawn to the problem, we came up with this dandy hoist attachment (Fig 1).

To use the hoist, you first unbolt the intake manifold assembly and lift it off. Then the hoist bolts right onto the two studs which held the intake. When you apply the hoist, make sure the straight side of it is toward the rear of the tractor.

With this gadget, you can hoist the starting-engine right out—slicker'n a whistle. What's more, when you're ready to put it back, you'll find that it balances at just the right angle in and down to slip into place.

Take a look at Fig 1 to check on the materials and measurements you'll need for the job.

The Engineer Shop Gang
Fort Sheridan, Illinois

Dear Gang,

You've got a good idea. No doubt about it. While we're on the subject, shift your eyes to Fig 2. This is the design for a hoist you can use on all later

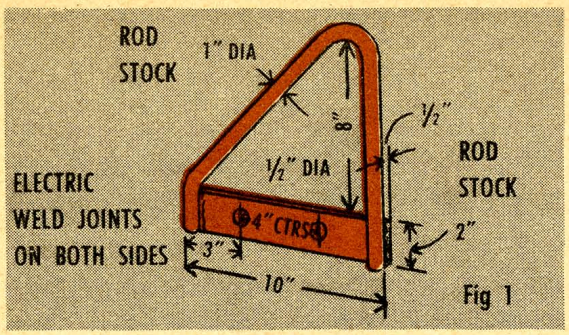


Fig 1

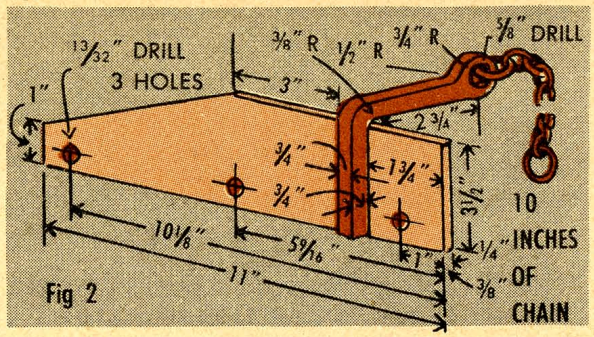


Fig 2

vertical starting-engines which have three cap-screws holes near the top of the block. With this bracket, the lifting chain clears the manifold or other parts of the diesel engine.

The water-cooled exhaust manifolds should be removed before it's applied to the D326 or D337 marine engines.

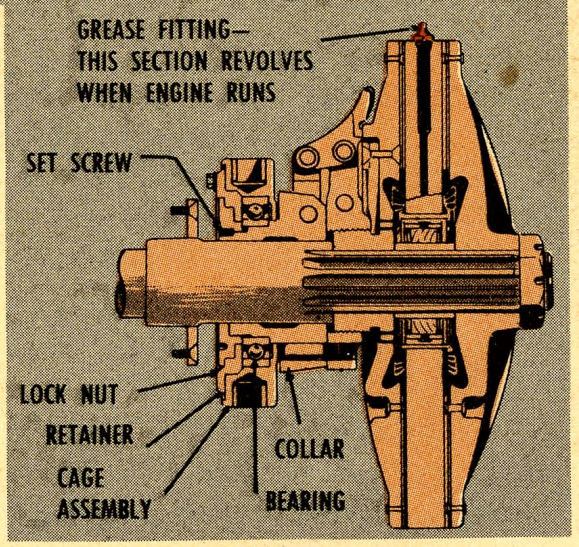
This bracket holds the starting-engine at its point of balance, and the engine can be maneuvered in and out of position easily. And what's best, it allows the pinion-end of the starting-engine to be raised or lowered with little effort and easily aligned with the flywheel housing bore. This cuts down on binding and breakage during installation.

-Sgt Dozer

When Lubing Your Caterpillar Tractor... DON'T MISS THIS

There's one lubrication fitting on Caterpillar track-type tractors equipped with dry clutches that's often missed. It's a bad one to miss, too, because master clutch failures often are the result. It's the lube fitting for the clutch-drive-plate-bearing, and it's mounted on the drive-plate that revolves with the flywheel of the engine.

That means the fitting also revolves when the engine's running. For this reason, you can only give it lube when she's stopped. So here's what you do:



Stop the engine. Turn the master-clutch-drive-plate by hand until the lubrication fitting is in the top position. You can reach the fitting easily when it's like this. Current lubrication orders call for this fitting to be greased daily—but sparingly. Too much lube'll cause grease to get into the clutch-friction-plates. This'll cause slippage and additional wear on the clutch facings.

Later model Cat track-type tractors—and motor graders, too—are equipped with oil clutches. But on those earlier machines with the dry clutch, be sure and watch this lube point.

STAGGERING OPERATION

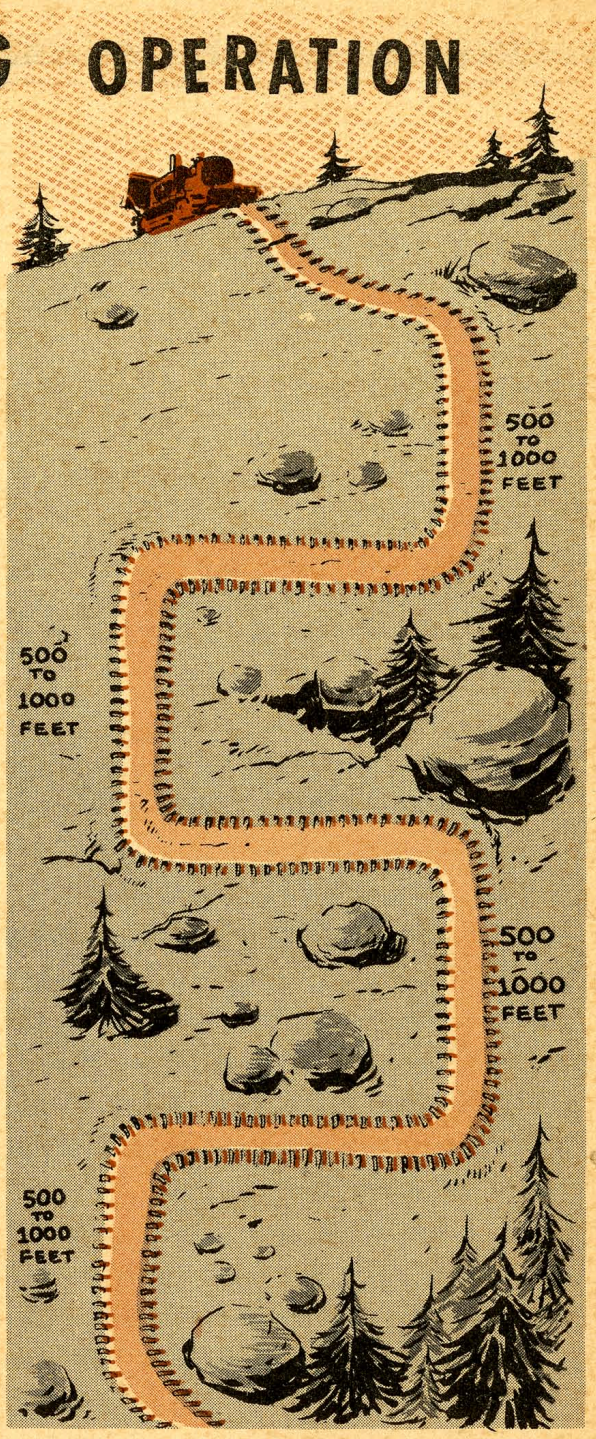
Nobody'll accuse you of having a load on if your tractor staggers on an extreme slope operation. Those track-type babies are geared for all kinds of terrain and rugged conditions, but when you have unusual operating conditions, you've gotta make certain allowances.

Sure—mud, sand and other types of soft terrain present no problem. The tracks give you plenty of traction. The engine is also powerful enough to allow the tractor to go up and down steep grades. And the seals, guards and other fittings protect your equipment from wear and tear on its working parts when working in adverse conditions.

But let's get back to those unusual operating conditions. That's when you gotta use a little extra care.

Many tractors—the Caterpillar D2, D4, D6 and D7 for example—have a splash lubrication system for the transmission and bevel gear compartments. When these machines are operated on steep slopes, the transmission top shaft bearings get less lubrication.

If you're gonna be operating on a steep slope for an extended period of time, all you gotta do is turn your tractor at right and left 90° angles every 500 to 1,000 feet on your way up or down. This'll give those transmission bearings longer life. Even tractors like the Caterpillar D8, with a force fed lubrication system in the transmission, need either more lube or sideways maneuvers when they are operated **down** steep slopes for a long time.



When you're operating up or down an unusually steep slope, use a little caution when making your turns, because a tractor'll turn over same as a truck.

Sound like a good idea? Give it a try the next time you're workin' on a steep slope. Your tractor'll be thanking you.

Engineer UER's...

SEND 'EM TO EMTO

In case you've missed it, there's a new AR out dealing with DA Form 468, Unsatisfactory Equipment Report. It's AR 700-38, dated 1 Nov 55. It's especially important to users of Engineer equipment.

The Engineer UER's are now sent in duplicate direct to:

Engineer Maintenance Technical Office
Granite City Engineer Depot
Granite City, Illinois
ATTN: ENGDGO-EM

There're also new reporting points for Signal and Medical equipment, too. You can check 'em in the AR. All UER's on other equipment will continue to go directly to the head of the responsible tech service except ammunition, drugs and biologicals.

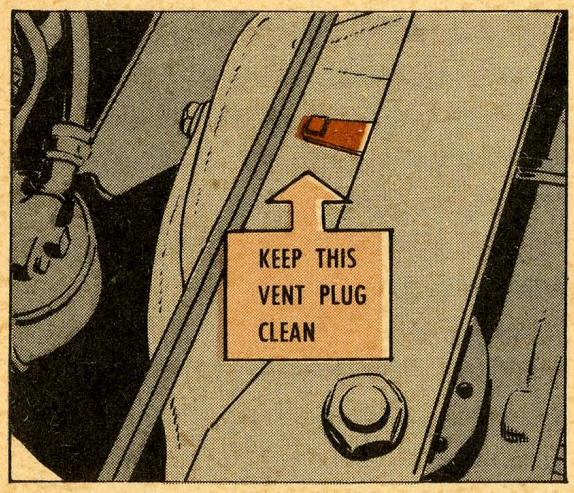
By the way, have you checked the new DA Form 468? It's dated 1 Oct 55. It's handy and compact and replaces all previous editions of the form.

WOOPS—A GOOF

That was a bum steer you got on page 35 of PS Magazine Issue 38. We were talking about LO's and told you that para 16 of AR 312-20 makes LO's mandatory to all users of Engineer equipment.

There's no doubt that the LO's are mandatory and have to be physically attached to the equipment at all times. But there's just no such animal as AR 312-20. It should've read **AR 310-20.** That's the one you'll find the right dope in.

DIRTY BREATHER PLUG

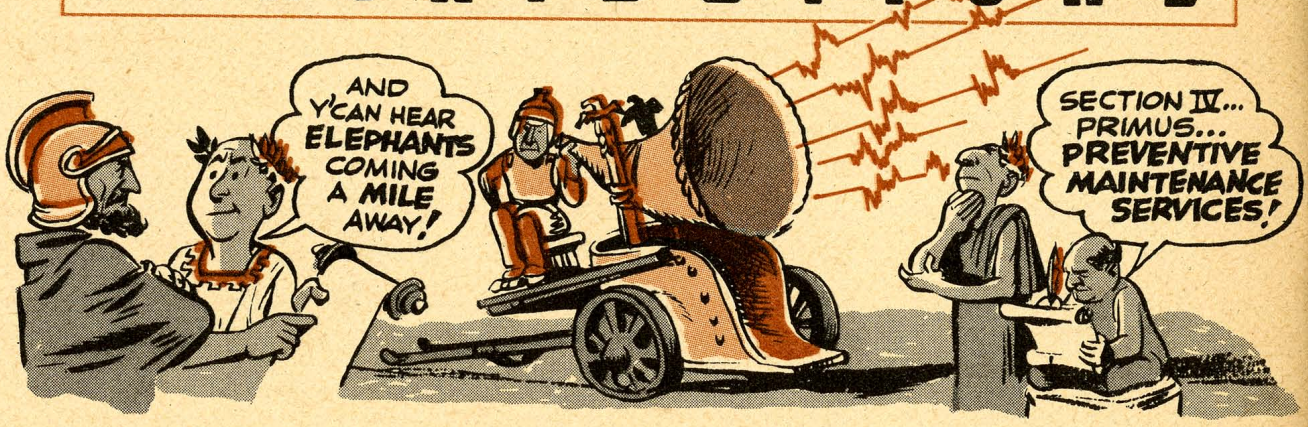


There's a breather on the Model 99-H Austin-Western motor grader that some men forget to clean. It's located on the right rear axle next to the engine compartment. This drawing will show you just exactly where the breather is. Just imagine you're standing on the right rear axle and looking down.

When this vent plug (Part No. PGF-4184) isn't cleaned, it generally gets clogged up with dirt and muck. Before you know it, you've got a blown axle seal as a result of the pressure that's built up. And that seal's a tough one to replace.

In case you've been forgetting, take a gander at that breather plug the next time you get ready to run your Austin-Western grader. If it's dirty, clean 'er up and then keep 'er that way. You'll head off a big job replacing an oil seal.

CONTRIBUTIONS



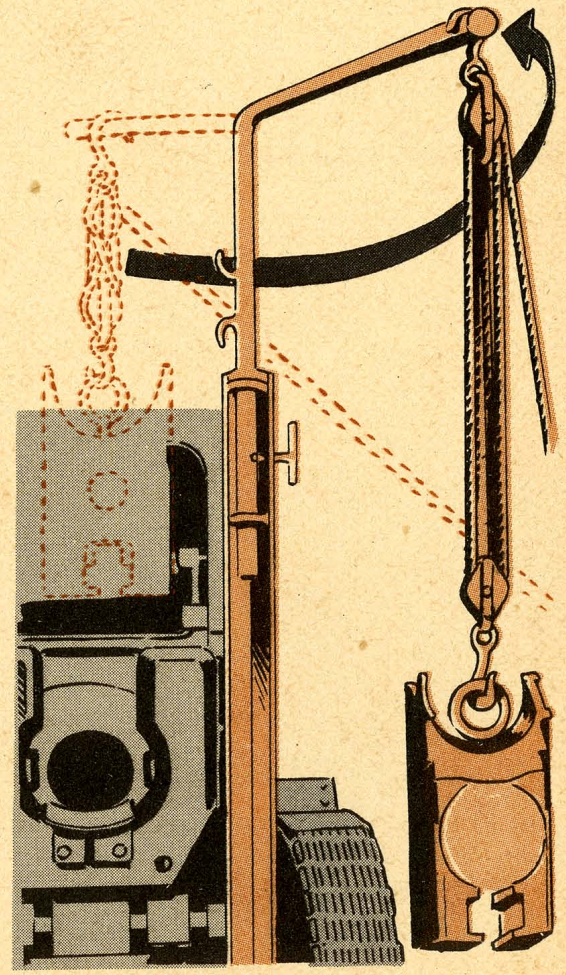
NO SWEAT A—TALL

Dear Editor,

Removing the breechblock from a 120-mm gun is a tough two-man job even for Tarzan and his twin. And after climbing around and getting the breechblock out, there's always the chance you'll slip or drop it or both.

This demountable, two-section hoist will make it a simple, one-man operation. With this davit you can lift the block, swing it around with the rope secured on the davit cleats, and lower the block on the gun platform with no sweat.

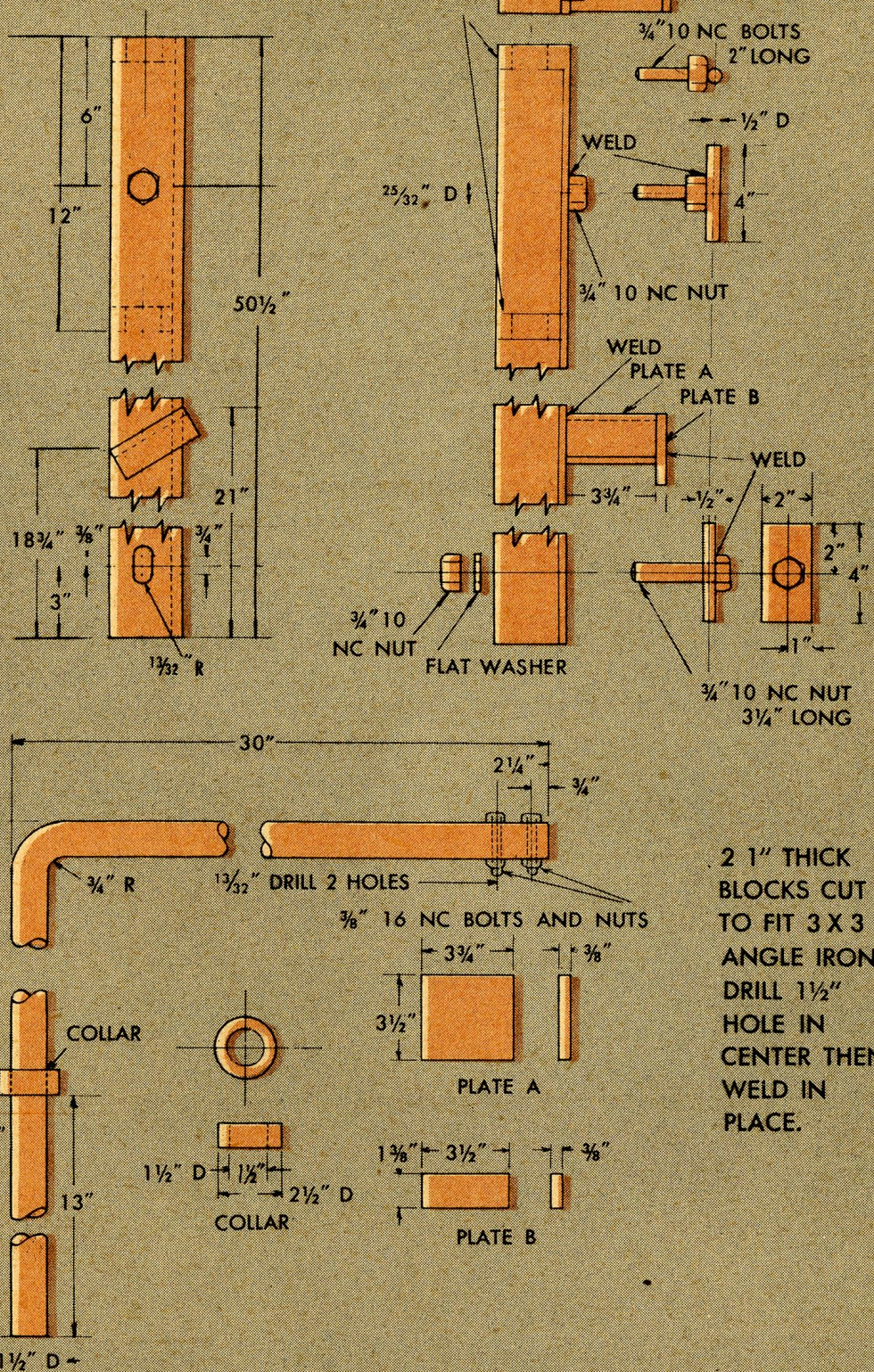
It's fastened to the elevation rack of the weapon by passing a bolt through the lightening hole at the bottom of the rack, and hooking the angled hook over the flat spot on the top end of the elevation quadrant. The drawing shows how we made it.



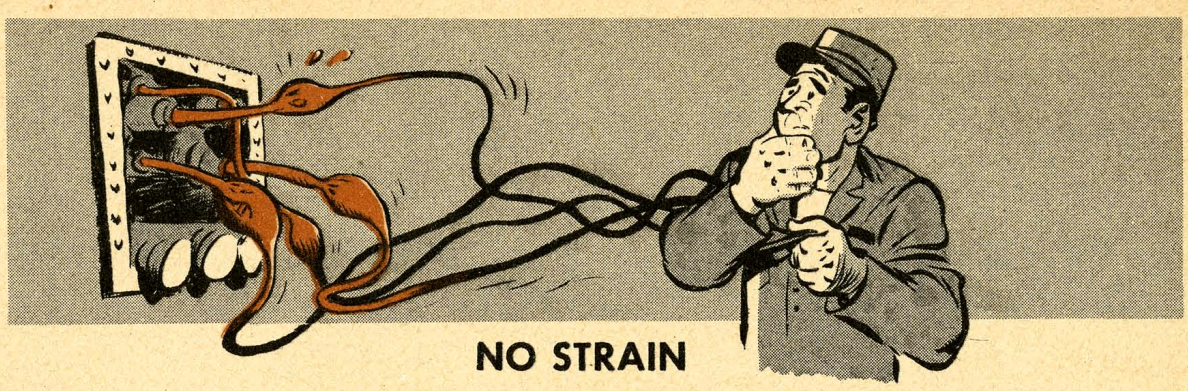
State Maintenance Shop
Washington National Guard

(Ed Note — Good brainwork to save brawn.

THIS IS HOW TO MAKE IT:



2 1" THICK BLOCKS CUT TO FIT 3 X 3 ANGLE IRON. DRILL 1½" HOLE IN CENTER THEN WELD IN PLACE.



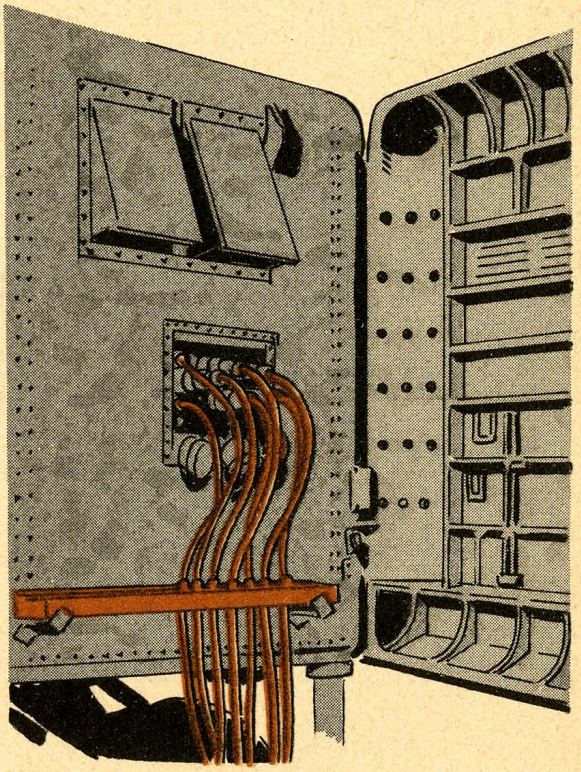
NO STRAIN

Dear Editor,

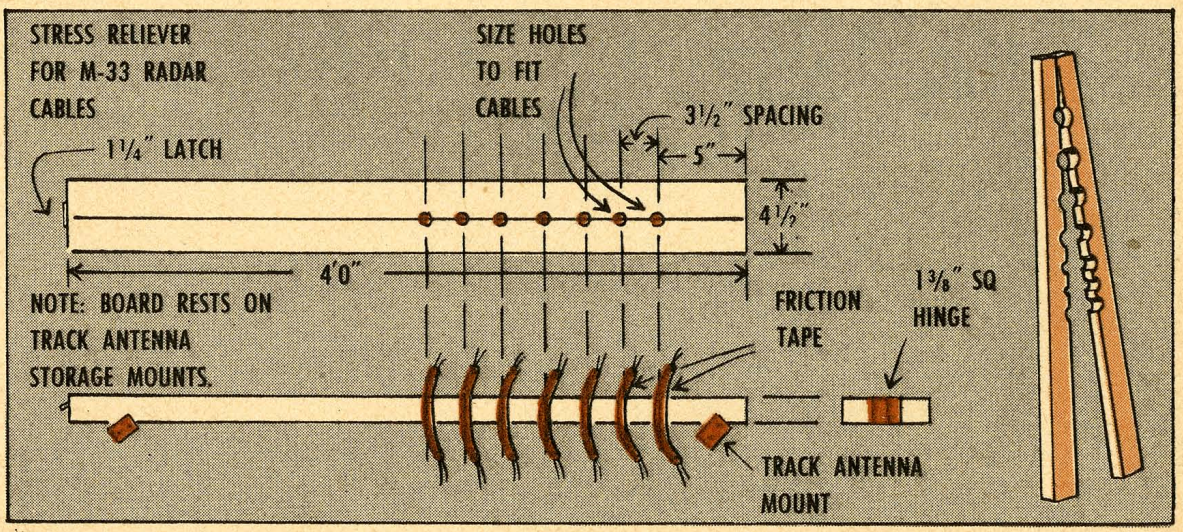
The strain on M33D radar van cables at their junction with receptacles has been solved in our outfit with a "stress reliever."

It's real simple, as this drawing shows you. Relieving the strain also kills the danger of the rubber covering separating from the plug and allowing moisture to enter the cable.

Capt William I. Racoosin
Camp Hanford, Washington



(Ed Note—Smart method. The cables are being redesigned. Your stress reliever is a good thing to ease the strain until the new ones are available.)



On your mark

Keep your peepers open for AR 746-2300-1. It'll tell you what kind of markings to put on your vehicles, guns and other equipment, what color paint to use to make these markings and just how to put these markings on.

3.5 launcher sight

You'll never hit the broad side of an outhouse with your 3.5 rocket launcher if the reflecting sight is too loose. So if you're having trouble with the indicator arm moving every time you put your eye to the sight, turn your piece in for repair. Ordnance will have to do it.

Order your ord

The new Ord 7 Supply Manual on the M133 series 2½-ton trucks—Ord 7 SNL G-749 (July 1955)—is out. Why not hop down to your supply sarge and see if he's got any copies in.

Hang onto those shims

If ya' ever have to remove or replace the breech guard on your M48 be sure you save the shims. You'll need 'em to get the guard back into the right position so the breech operating handle will have complete clearance.

Same difference

For you that've been having trouble with those E and A numbers on your 1½-ton, 2-wheel trailers, here's the dope that'll straighten things out—

Trailer, cargo, 1½-ton, 2-wheel, M104E1 is the same as M104A1.

Trailer, water tank, 1½-ton, 2-wheel, M106E1 and M106E2 are the same as M106A1.

Trailer, water tank, 1½-ton, 2-wheel, M107E1 and M107E2 are the same as M107A1.

The one and only

There's one—and only one—kind of potentiometer oil to use in the M33 FCS System. That's **Bayol D** Ord Stock No. 14-0-2838. Don't use any substitute, even if it has the same stock number.

Ohh—my achin' pintle!

You been trying to tow a tank with a bar or cable hooked onto your buggy's towing pintle? Pulleesease! That pintle's made for light hauls only—like a small trailer. On heavy stuff it'll just get you busted bolts and brackets. Use your towing shackles for the heavies. That's what they're there for.

Cover check

Check your canvas covers for the firing jack on the 155-mm howitzers. Somebody goofed and stamped some of them Cover, Jack, **105-mm** Howitzer Carriage, M1A2, B7138607. To keep things straight, change the nomenclature to Cover, Jack, 155-mm Howitzer Carriage, M1A2.

Bouncey

Do you feel like a yo-yo every time you go for a ride in your M38 Jeep when squatting in the front seat? If so, take her back to Ordnance and have them apply MWO Ord G740-W10 (6 Oct 55). It tells them to really secure that front passenger seat pivot pin to the seat hinge pivot. Gives no more jumbled intestines.

3/8 does it

Hear there's still some doubt about wot's the right wear limits on tank drive sprockets—before you turn 'em in to be reclaimed. Take another good look at TB Ord 545 (30 Mar 55) and you'll see that it calls for .375 inch. That's 3/8—not 3/16 as was specified in an earlier directive.

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